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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Christer O. Andreasson et al.	)	Group Art Unit 2612
Serial No. 10/086,183	)	Examiner: Julie Bichngoc Lieu
Filed: February 26, 2002	)	
For: SYSTEMS AND METHODS FOR TRACKING PHARMACEUTICALS WITHIN A FACILITY	)	Confirmation No. 8214
Ref. No. 707907.38	)	

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal to the Board of Patent Appeals and Interferences from a Final Office Action dated March 26, 2007. A Notice of Appeal was timely submitted on June 26, 2007.

CERTIFICATE OF MAILING
37 CFR §1.8

I hereby certify, pursuant to 37 CFR §1.8, that I have reasonable basis to expect that that this paper or fee (along with any referred to as being attached or enclosed) would be mailed or transmitted on or before the date indicated with the United States Postal Service with sufficient postage as first class mail on the date shown below in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Dated: August 27, 2007

Jodie Davis

Jodie Davis

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The undersigned authorizes a charge to Deposit Account No. 150665 in the amount of $500.00 for the filing of this Appeal Brief (pursuant to 37 C.F.R. §41.20(b)(2) in the above-identified matter. The undersigned also authorizes any additional fees which may be required, or credit any overpayment, to Deposit Account No. 150665.

Applicant submits this Appeal Brief in accordance with 37 C.F.R. § 1.192.

I. REAL PARTY IN INTEREST

The real party in interest is SAFETY SYRINGES, INC., a corporation organized and existing under and by virtue of the laws of the STATE OF DELAWARE and having its principal place of business at 2875 Loker Avenue East, Carlsbad, California 92010.

II. RELATED APPEALS AND INTERFERENCES

NONE.

III. STATUS OF CLAIMS

Claims 1 through 10 and 30 through 70 are appealed. Each of these claims stands rejected.

IV. STATUS OF AMENDMENTS

Amendments have been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

There are three independent Claims 1, 39 and 46 to the defined apparatus, and three independent Claims 30, 55 and 63 to the defined method.

Claim 1 is directed to an apparatus for monitoring administration (described throughout the application, but mainly page 1, line 5-8; page 11, lines 7-22; page 20, lines 6-22, page 25, line 22; page 26, line 15; Abstract) of medical products (Fig. 1A and Fig. 1B) to a patient, each of the medical products comprising a radio frequency identification (RFID) tag (20 in Fig. 1) for storing data (page 6, lines 4 – 15; page 9, lines 6-22) related to the respective medical products, a reader (page 10, lines 5-10, lines 14-23; page 17, lines 6-10; 145 and 155 in Fig. 2) for substantially simultaneously reading (page 6, lines 4-14; page 15, lines 3-10) RFID tags associated with a plurality (page 10, lines 5-10,) of medical products to obtain the data stored (page 9, lines 6-22) in the RFID tags, and a processor (page 6, lines 4-14; page 10, line 11; page 11, line 6; in 130, 140, 150 of Fig. 2) coupled to the reader (Fig. 2) for comparing (page 6, lines 4-14) the data obtained from the RFID tags with data associated with a patient to verify (page 6, line 22 – page 7, line 2; page 24, lines 6-21) that the patient is intended to receive the medical products.

30. A method for identifying a plurality of medical products (page 6, lines 1-3; page 15, lines 7-10), each of the medical products comprising a for storing data

(page 6, lines 4-15; page 9, lines 6 – 22) related to the respective medical product, the method comprising:

placing the plurality of medical products in close proximity to a RF antenna (page 6, lines 10-14, page 6, lines 18-22; page 9, lines 1-5);

substantially simultaneously reading (page 6, lines 4-14; page 15, lines 3-10) Radio Frequency Identification (RFID) tags (20) associated with the medical products using the RF antenna (page 6, lines 18 – 22; page 9, lines 1-5) to obtain the data stored in the RFID tags; and

identifying each of the plurality of medical products (page 6, lines 1-3; page 15, lines 7-10) based upon the data obtained from the RFID tags.

39. An apparatus for monitoring administration (described throughout the application, but mainly page 1, line 5-8; page 11, lines 7-22; page 20, lines 6-22; page 25, line 22; page 26, line 15; Abstract) of medical products to a patient, each of the medical products comprising a Radio Frequency Identification (RFID) tag (20 in Fig. 1) for storing data (page 6, lines 4 – 15; page 9, lines 6-22) related to the respective medical product, the apparatus comprising:

a reader (page 10, lines 5-10, lines 14-23; page 17, lines 6-10; 145 and 155 in Fig. 2) for reading the RFID tags associated with a plurality (page 10, lines 5-10) of medical products placed in close proximity (page 6, lines 18-22; page 15, lines 3-12; page 24, lines 1-2) to the reader to obtain the data stored in the RFID tags; and

a processor (page 6, lines 4-14; page 10, line 11; page 11, line 6; in 130, 140, 150 of Fig. 2) coupled to the reader (Fig. 2) for processing the data obtained from the RFID tags to identify the medical products, wherein the reader comprises and antenna mounted in an entrance (page 23, lines 6-11; page 24, lines 2-5) to the patient's room, the antenna configured to read the RFID tags associated with the medical products when the medical products pass through the entrance (page 23, lines 6-11; page 24, lines 2-5).

45. An apparatus for monitoring administration (described throughout the application, but mainly page 1, line 5-8; page 11, lines 7-22; page 20, lines 6-22; page 25, line 22; page 26, line 15; Abstract) of medical products to a patient, ech of the medical products comprising a Radio Frequency Identification (RFID) tag (20 in Fig. 1) for storing data related to the respective medical product, the apparatus comprising:

a reader (page 10, lines 5-10, lines 14-23; page 17, lines 6-10; 145 and 155 in Fig. 2) for reading the RFID tags associated with a plurality of medical products placed in close proximity (page 6, lines 18-22; page 15, lines 3-12; page 24, lines 1-2) to the reader to obtain the data stored in the RFID tags; and

a processor (page 6, lines 4-14; page 10, line 11; page 11, line 6; in 130, 140, 150 of Fig. 2) coupled to the reader for processing the dtat obtained from the RFID tags to identify the medical products (page 6, lines 1-3, page 15, lines 7-10), wherein

the reader is configured for substantially simultaneously reading (page 6, lines 4-14; page 15, lines 3-10) a plurality of RFID tags associated with a plurality (page 10, lines 5-10) of medical products placed in close proximity (page 6, lines 18-22; page 15, lines 3-12; page 24, lines 1-2) to the reader.

55. A method for monitoring administration (described throughout the application, but mainly page 1, line 5-8; page 11, lines 7-22; page 20, lines 6-22, page 25, line 22; page 26, line 15; Abstract)of a medical product to a patient, the medical product comprising a Radio Frequency Identification (RFID) tag (20 in Figure 1) for storing data related to the medical product, the method comprising:

reading (page 6, lines 4-14; page 15, lines 3-10) the RFID tag associated with the medical product to obtain the data stored in the RFID tag when the medical product passes through an entrance (page 23, lines 6-11; page 24, lines 2-5) to the patient's room;

accessing data (page 4, lines 11-13; page 4, lines 18-21; page 6, lines 4-14; page 6, line 18 - page 7, line 2; page 9, lines 6-11, page 11, lines 7-10; page 24, line 6-10; Abstract, original Claim 21) associated with a patient; and

verifying (page 6, line 22- page 7, line 2; page 24, line 6-21) that the patient is intended to receive the medical product by comparing the data obtained from the RFID tag with the data associated with the patient (page 6, line 18 – page 7, line 2).

63. A method for monitoring administration (described throughout the application, but mainly page 1, line 5-8; page 11, lines 7-22; page 20, lines 6-22; page 25, line 22; page 26, line 15; Abstract) of a medical product to a patient, the medical product comprising a Radio Frequency Identification (RFID) tag (20 in Fig. 1) for storing data (page 6, lines 4 – 15; page 9, lines 6-22) related to the medical products, the method comprising:

substantially simultaneously reading (page 6, lines 4-14; page 15, lines 3-10) RFID tags associated with a plurality of medical products (page 6, lines 18-22; page 9, lines 1-5);

accessing data (page 4, lines 11-13; page 4, lines 18-21; page 6, lines 4-14; page 6, line 18 - page 7, line 2; page 9, lines 6-11, page 11, lines 7-10; page 24, line 6-10; Abstract, original Claim 21); and

verifying (page 6, line 22- page 7, line 2; page 24, line 6-21) that the patient is intended to receive the medical product by comparing the data obtained from the RFID tag with the data associated with the patient (page 6, line 18 – page 7, line 2), and wherein the verifying step comprises verifying that each of the plurality of medical products is intended for the patient (page 21, lines 15-17; page 22, lines 10-12; page 24, lines 13-15; page 27, line 21 – page 28, line 3, page 30, lines 3-10).

The dependent claims define further details of the apparatus and method.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether Claims 1 through 10 and 30 through 70 are unpatentable under 35 U.S.C. 103 as being unpatentable over Chung US 2004/0036623.

VII. ARGUMENT

A. The Claims Are Not Unpatentable Over Chung

This is an appeal which should not be necessary since the Examiner rejected claims on non prior art.

Applicant respectfully traverses the rejection of Claims 1-10 and 30-70, and respectfully requests that this Appeal be sustained in its entirety. Applicant initially notes that it is a fundamental aspect of patent law that a claim cannot be unpatentable over art that is not prior art. The Examiner refuses and fails to recognize that the cited Chung publication US 2004/0036623 is not prior art because its filing date of October 9, 2001, is later than the priority date of prior to September 19, 2001, that has been established by Applicant. The Examiner contends that one underlying Chung provisional application No. 60/248,454 filed November 14, 2000, makes all of the disclosure available as prior art in Chung's published application US 2004/0036623 even though '454 only discloses a miniscule amount of what is in '623. The published application '623 is based on 12 provisional applications, and inherently not much of the disclosure of the published application of '623 could be in one provisional application.

The Chung published application US 2004/0036623 is attached in the Evidence Appendix as Exhibit A for the convenience of this Board. The provisional application 60/248,454 cited by the Examiner as a basis for contending that '623

predated Applicant's date is attached in the Evidence Appendix as Exhibit B for the convenience of the Board. The only part of 60/248,454 that is relevant to the present claim is pages 8-10 and which is very sketchy.

Attached in the Evidence Appendix as Exhibit C is a copy of the Declaration of the Inventors under 37 C.F.R. Section 1.131 to establish a date of invention pre-dating two earlier cited publications to Martucci et al. and Bui et al. previously used by the Examiner in rejecting claims. Attached in the Evidence Appendix as Exhibit D is a Supplemental Declaration filed August 15, 2006, to swear back of a different Chung provisional application 60/232,514 filed on September 19, 2001, and establishes a date of invention prior to September 19, 2001.

The Examiner purported to base her rejection on provisional application 60/248,454, but in reality rejected claims of the application on the entirety of Chung US 2004/0036623, most of which, as the Examiner knew, had a priority date well after the date of September 19, 2001, previously established in this application. Most of the specific references to Chung '623 by the Examiner are not disclosed in, apparent from nor even hinted at in the provisional application '454.

Most of the disclosure in '454 does not relate at all to administering medicine, but relates to manufacturing, inventory, transportation, trade-show and sales leads management, time attendance, retail management and shipping management.

There follows below an annotated copy of pages 2 – 12 of the Examiner's Final Rejection of the claims in this application. It has been annotated to identify those components and statements in Chung '623 used by the Examiner which are not disclosed at all in '454. The same annotation was filed in this application on April 10, 2007, in seeking reconsideration of the Examiner's final rejection.

B. **Chung 60/248,454 Does Not Disclose Much of What The Examiner Contends It Does**

The Examiner's final rejection is below, with Applicant's comments in bold.

Claim Rejections - 35 USC § 103

Claims 55-59 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Chung (US 2004/0036623). **[Filing date of 10/09/2001 is after applicant's established date of September 19, 2001].**

Claim 55:

Chung discloses a method for monitoring administration **[no, merely delivery of medicine at a pharmacy]** of a medical product to a patient, the medical product comprising a Radio Frequency identification (RFID) tag for storing data related to the medical product, the method comprising:

a. reading the RFID tag 200 **[tag 200 not disclosed in 60/248,454]** associated with the medical product to obtain the data stored in the RFID tag when the medical product passes along a transport path.

b. accessing data associated with a patient, and verifying that the patient is intended to receive the medical product by comparing the data obtained from the RFID tag with the data associated with the patient (para. [0042].) **[Not in '454; NEW in PCT Application of 10/09/2001]**

See fig. 6 **[most of Fig. 6 is in '454, but not blades 42 and 200-M]** and page 12, para. [0132] to page 14, para. [0136]. **[Not in '454]**

It is not clearly stated that the data stored in the RFID tag is obtained when the product passes through an entrance to the patient's room. Nonetheless, the reference suggests that the product (tracked object) is tracked along a transport path. Thus, it would have been obvious to one skilled in the art to read the object RIFD in Chung as it passes the entrance of a patient's room because the system is intended for use to verify that the medication should be administered to the right patient. **[Not stated at all; no disclosure of any patient room, hospital, etc.; just delivery of medicine at pharmacy]**

Claim 56:

The verifying step disclosed in Chung's further comprises comparing a product identifier from the data obtained from the RFID tag with a product identifier from the data associated with the patient.

Claim 57:

In Chung's, the product identifier comprises at least one of a product name, a dosage, and a product serial number.

Claim 58:

The method in Chung's further comprises displaying **[not displayed]** a

mismatch notification when there is a mismatch between the data obtained from the RFID tag and the data associated with the patient. Para. [0138]. **[Not in '454]**

Claim 59:

Chung's method further comprises activating an output device when there is a mismatch between the data obtained from the RFID tag and the data associated with the patient. Para. [0138]. **[Not in '454]**

Claims 1-10, 30-54, and 60-70 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Chung (US 2004/0036623) in view Issacman et al. (US Patent No. 6,127,928).

Claim 1:

Chung discloses an apparatus for monitoring administration of medical products to a patient, each of the medical products comprising a RFID tag 200 for storing data related to the respective medical product, the apparatus comprising:

a. A reader 42 **[42 is not in '454]** for reading RFID tags associated with a plurality of medical products placed in close proximity to the reader to obtain the data stored in the RFID tags;

b. A processor 30 **[not in '454]** coupled to the reader for processing data obtained from the RFID tags to identify the medical products.

The reference fails to disclose substantially simultaneously reading **[fails is correct]** the RFID tags. However, this feature is well known in the art as taught in Issacman (col. 7, last paragraph) **[no, he specifically discloses "sequentially" not simultaneously]**. In light of this teaching, it would have been obvious to a skilled artisan to readily recognized using a tag reader with ability to read multiple tags

substantially simultaneously as in Issacman's in the Chung system because it would be advantageous and desirable to read several tags at the same time.

See figs. 3 [not in '454] and 6 and page 12, para. [0132] to page 4, para. [0136]. [Not in '454]

Claim 2:

The Chung system has a memory coupled to the processor 30 [no] for storing data associated with patient. See front-page figure. [Not in '454]

Claim 3:

The processor in Chung's system compares the product identifiers from the data obtain from the RFID tags with product identifiers from the data associated with the patient.

Claim 4:

The product identifiers used in Chung's is one of the product names and dosages. Para. [0056]. [0056 not in '454]

Claim 5:

A display 50 [not in '454] is coupled to the processor 30. See fig. 3. [Not in '454]

Claim 6:

Chung discloses an output device coupled to the processor [not in '454], and wherein the processor activates the output device when the processor detects a

mismatch between the data obtained from the RFID tags and the data associated with the patient. See fig. 5B [not in '454] and [0136]. [Not in '454]

Claim 7:

The output device in the Chung system is a display 50 [not in '454] which is functionally equivalent to the at least one of a light indicator or an audio indicator. Furthermore, the usè of a light or an audio indicator to provide a warning would not constitute an inventive concept because they are conventional in the art.

Claim 8:

It is not clearly stated [it is not stated at all] in Chung's that the data stored in the RFID tag is obtained when the product passes through an entrance to the patient's room. Nonetheless, the reference suggests that the product (tracked object) is tracked along a transport path. Thus, it would have been obvious to one skilled in the art to read the object RIFD in Chung as it passes the entrance of a patient's room [not so; only tracks at pharmacy] because the system is intended for use to verify that the medication should be administer to the right patient.

Claims 9 and 10:

In the combined system of Chung and Issacman, it would have been obvious to one skilled in the art to use a read pad to provide a surface [not disclosed] for placing the medical products because the use of a read pad would allow the products to be read simultaneously more easily though not necessary. [No disclosures at all; only sequential]

Claim 30:

Chung discloses an apparatus thus a method for identifying a plurality of medical products, each of the medical products comprising a for storing data related to the respective medical product, the method comprising:

a. placing the plurality of medical products in close proximity to a RF antenna;

b. reading the Radio Frequency identification (RFID) tags associated with the medical products using the RF antenna to obtain the data stored in the RFID tags; and

c. identifying each of the plurality of medical products based upon the data obtained from the RFID tags.

See front-page figure. **[Not in '454]**

The reference fails to disclose substantially simultaneously reading the RFID tags. However, this feature is well known in the art as taught in Issacman (col. 7, last paragraph) **[no, he specifically discloses "sequentially" not simultaneously]**. In light of this teaching, it would have been obvious to a skilled artisan to readily recognized using a tag reader with ability to read multiple tags substantially simultaneously **[no]** as in Issacman's in the Chung system because it would be advantageous and desirable to read several tags at the same time.

Claim 31:

The method in Chung's further comprises recording administration of the identified medical products to a patient using tag 200-Rx. **[200-Rx not disclosed in '454]**

Claim 32:

The identifying step in Chung's comprises accessing a database **[not in '454]** to obtain data associated with the medical products based upon the data obtained from the RFID tags.

Claim 33:

It is not clear in Chung's that the data obtained from the RFID includes location identifiers **[nothing like this in '454]**. However, it would have been obvious to one skilled in the art to configure the system to relate the product's location with the database **[no disclosure in '454]** to retrieve the product's information as desired. This feature would not be considered as an inventive step because it only presents a choice in design.

Claim 34:

The step in Chung's includes verifying that the patient is intended to receive the plurality of medical products by comparing the data obtained from the RFID tags with the data associated with the patient. See fig. 6 and para. [0136]. **[0136 not in '454]**

Claim 35:

The Chung system includes a patient RFID tag 200-Rx **[200-Rx not in '454]** for uniquely identifying a patient intended to receive a medical product.

Claims 36-37:

It is not clearly stated in Chung's that the data stored in the RFID tag is obtained when the product passes through an entrance to the patient's room **[no disclosure in '454 at all]**. Nonetheless, the reference suggests that the product (tracked object) is tracked along a transport path. Thus, it would have been obvious to one skilled in the art to read the object RIFD in Chung as it passes the entrance of a patient's room because the system is intended for use to verify that the medication should be administer to the right patient. **[Not stated at all; no disclosure of any patient room, hospital, etc.; just delivery of medicine at pharmacy]**

Claim 38:

Chung suggests the use of the system in a healthcare pharmacy **[absolutely not in '454]**; therefore, a transport path in Chung could include the pharmacy doorway. Further, the use of the combined system in Chung's and Issacman's in a pharmacy would not alter the function of the device, thus, this feature does not present a novel or inventive step.

Claims 39:

Chung discloses an apparatus for monitoring administration of medical products to a patient, each of the medical products comprising a RFID tag 124a **[124a not in '454]** for storing data related to the respective medical product, the apparatus comprising:

c. A reader 42 **[42 not in '454]** for reading RFID tags associated with a plurality of medical products placed in close proximity **[not disclosed]** to the reader to obtain the data stored in the RFID tags;

d. A processor 30 **[not in '454]** coupled to the reader 42 for processing data obtained from the RFID tags to identify the medical products.

The reference fails to disclose substantially simultaneously reading **[fails is correct]** the RFID tags. However, this feature is well known in the art as taught in Issacman (col. 7, last paragraph) **[no, he specifically discloses "sequentially" not simultaneously]**. In light of this teaching, it would have been obvious to a skilled artisan to readily recognized using a tag reader with ability to read multiple tags substantially simultaneously as in Issacman's in the Chung system because it would be advantageous and desirable to read several tags at the same time.

Claim 40:

A display **[none in '454]** in Chung's is coupled to the processor 30 **[no]** and the processor inherently controls the display 50 **[no]** to display the identified medical products. See fig. 5B. **[Not in '454]**

Claim 41:

Chung further discloses a network interface 10 (see fig. 2) [not in '454] to the processor 30 [not in '454], and wherein the processor is configured for transmitting data obtained from the RFID tags using the network interface. See fig. 2. [Not in '454]

Claim 42:

Processor 30 [not in '454] is configured for receiving a notification via network interface [no], in response to the transmission [no], indicating whether to administer the identified medical products. See fig. 2. [Not in '454]

Claim 43:

A display 50 [not in '454] is coupled to the processor 30 [not in '454], and wherein the processor is configured for displaying [no] the received notification on the display.

Claim 44:

An output device, display 50 [no], is coupled to the processor 30 [no], and wherein the processor 30 [no] activates the output device when the received notification indicates that the identified medical products should not be administered. Fig. 5B [not in '454] and para. [0136]. [Not in '454]

Claim 45:

The output device in Chung does not include least one of a light indicator and an audio indicator. However, one skilled in the art would have readily recognized

that display 50 [not in '454] provides an equivalent function of a light indicator to indicate an alarm condition.

Claims 46-52:

The rejection of claims 46-52 recites the rejection of claims 39-45.

Claim 53:

The reference fails to disclose substantially simultaneously reading the RFID tags. However, this feature is well known in the art as taught in Issacman (col. 7, last paragraph) [no, he specifically discloses "sequentially" not simultaneously]. In light of this teaching, it would have been obvious to a skilled artisan to readily recognized using a tag reader with ability to read multiple tags substantially simultaneously as in Issacman's in the Chung system because it would be advantageous and desirable to read several tags at the same time.

Claim 54:

Chung's method comprises reading the RFID tag associated with the medical product when the medical product is placed in close proximity to a reader. It is not clearly stated [not stated at all in '454] that the reader in the Chung system is a read pad; however, it would have been obvious to one skilled in the art to use a read pad in Chung' because it is functionally equivalent to the reader 42. [Not in '454]

Claim 60:

Chung's method comprises reading the RFID tag associated with the medical product when the medical product is placed in close proximity to a reader. It is not clearly stated that the reader in the Chung system is a read pad; however, it would

have been obvious to one skilled in the art to use a read pad in Chung' because it is functionally equivalent to the reader 42. **[Not in '454]**

Claim 61:

It is not clear whether Chung records administration of the medical product to the patient **[not disclosed at all]** when there is a match between the data obtained from the RFID tags and the data associated with the patient. However, it would have been obvious to one skilled in the art to incorporate the idea into the Chung system because it would keep a record of the administering of the medical product to the particular patient for future purposes. **[Hindsight]**

Claim 62:

The Chung reference fails to disclose substantially simultaneously reading the RFID tags. However, this feature is well known in the art as taught in Issacman (col. 7, last paragraph) **[no, he specifically discloses "sequentially" not simultaneously]**. In light of this teaching, it would have been obvious to a skilled artisan to readily recognized using a tag reader with ability to read multiple tags substantially simultaneously as in Issacman's in the system of Chung's because it would be advantageous and desirable to read several tags at the same time.

Claim 63:

The rejection of claim 63 recites the same rejection of claim 1, except it is a method claim.

Claims 64-67:

The rejection of claim 64-67 recites the same rejection of claims 3-6, except they are method claims.

Claim 68:

The rejection of claim 68 recites the same rejection of 8, except it is method claim.

Claim 69:

Chung's method comprises reading the RFID tag associated with the medical product when the medical product is placed in close proximity to a reader. It is not clearly stated that the reader in the Chung's system is a read pad; however, it would have been obvious to one skilled in the art to use a read pad in Chung's because it is functionally equivalent to the reader 42. **[Not in '454]**

Claim 70:

It is not clear whether Chung records administration of the medical product to the patient **[not disclosed]** when there is a match between the data obtained from the RFID tags and the data associated with the patient. However, it would have been obvious to one skilled in the art to incorporate the idea into the Chung system because it would keep a record of the administering of the medical product to the particular patient for future purposes.

C. Conclusion

As is seen from the above discussion, it is respectfully submitted that the Chung Published application US 2004/0036623 is not prior art to the present application and that the disclosure in Chung Provisional Application 60/248,454 is deficient in its disclosure, contrary to the Examiner's contentions, and that Claims 1 through 10 and 30 through 70 are patentable over Chung. Thus, it is respectfully requested that the Board reverse the Examiner on the issues presented in this Brief and withdraw the rejections of Claims 1 through 10 and 30 through 70.

Respectfully submitted,
ORRICK, HERRINGTON & SUTCLIFFE LLP

Dated: 8/27/07

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VIII. CLAIMS APPENDIX

1. An apparatus for monitoring administration of medical products to a patient, each of the medical products comprising a Radio Frequency Identification (RFID) tag for storing data related to the respective medical product, the apparatus comprising:

a reader for substantially simultaneously reading RFID tags associated with a plurality of medical products to obtain the data stored in the RFID tags; and

a processor coupled to the reader for comparing the data obtained from the RFID tags with data associated with a patient to verify that the patient is intended to receive the medical products.

2. The apparatus of claim 1, further comprising a memory coupled to the processor for storing the data associated with the patient.

3. The apparatus of claim 1, wherein the processor compares product identifiers from the data obtained from the RFID tags with product identifiers from the data associated with the patient.

4. The apparatus of claim 3, wherein the product identifiers comprise at least one of product names and dosages.

5. The apparatus of claim 1, further comprising a display coupled to the processor, and wherein the processor controls the display to display a mismatch notification when the processor detects a mismatch between the data obtained from the RFID tags and the data associated with the patient.

6. The apparatus of claim 1, further comprising an output device coupled to the processor, and wherein the processor activates the output device when the processor detects a mismatch between the data obtained from the RFID tags and the data associated with the patient.

7. The apparatus of claim 6, wherein the output device comprises at least one of a light indicator and an audio indicator.

8. The apparatus of claim 1, wherein the reader is configured to read the RFID tags associated with the medical products when the medical products pass through an entrance to the patient's room.

9. The apparatus of claim 1, further comprising a read pad, and wherein the reader comprises an antenna in the read pad for reading the RFID tags associated with the medical products when the medical products are placed in close proximity to the read pad.

10. The apparatus of claim 9, wherein the read pad comprises a surface onto which the medical products may be placed.

30. A method for identifying a plurality of medical products, each of the medical products comprising a for storing data related to the respective medical product, the method comprising:

placing the plurality of medical products in close proximity to a RF antenna;

substantially simultaneously reading Radio Frequency Identification (RFID) tags associated with the medical products using the RF antenna to obtain the data stored in the RFID tags; and

identifying each of the plurality of medical products based upon the data obtained from the RFID tags.

31. The method of claim 30, further comprising recording administration of the identified medical products to a patient.

32. The method of claim 30, wherein the identifying step comprises accessing a database to obtain data associated with the medical products based upon the data obtained from the RFID tags.

33. The method of claim 32, wherein the data obtained from the RFID tags comprises location identifiers, and wherein the identifying step comprises accessing locations in the database identified by respective location identifiers to obtain product identifiers identifying respective medical products.

34. The method of claim 30, further comprising verifying that the patient is intended to receive the plurality of medical products by comparing the data obtained from the RFID tags with the data associated with the patient.

35. The apparatus of claim 1, including a patient RFID tag for uniquely identifying a patient intended to receive a medical product.

36. The apparatus of claim 1, wherein a reader is configured to read the RFID tags associated with the medical products when the medical products pass through a doorway.

37. The apparatus of claim 36, wherein the doorway is the entrance to a patient's room.

38. The apparatus of claim 36, wherein the doorway is of a healthcare pharmacy.

39. An apparatus for monitoring administration of medical products to a patient, each of the medical products comprising a Radio Frequency Identification (RFID) tag for storing data related to the respective medical product, the apparatus comprising:

a reader for reading the RFID tags associated with a plurality of medical products placed in close proximity to the reader to obtain the data stored in the RFID tags; and

a processor coupled to the reader for processing the data obtained from the RFID tags to identify the medical products, wherein the reader comprises an antenna mounted in an entrance to the patient's room, the antenna configured to read the RFID tags associated with the medical products when the medical products pass through the entrance.

40. The apparatus of claim 39, further comprising a display coupled to the processor, and wherein the processor controls the display to display the identified medical products.

41. The apparatus of claim 39, further comprising a network interface coupled to the processor, and wherein the processor is configured for transmitting the data obtained from the RFID tags using the network interface.

42. The apparatus of claim 41, wherein the processor is configured for receiving a notification via the network interface, in response to the transmission, indicating whether to administer the identified medical products.

43. The apparatus of claim 42, further comprising a display coupled to the processor, and wherein the processor is configured for displaying the received notification on the display.

44. The apparatus of claim 42, further comprising an output device coupled to the processor, and wherein the processor activates the output device when the received notification indicates that the identified medical products should not be administered.

45. The apparatus of claim 44, wherein the output device comprises at least one of a light indicator and an audio indicator.

46. An apparatus for monitoring administration of medical products to a patient, each of the medical products comprising a Radio Frequency Identification (RFID) tag for storing data related to the respective medical product, the apparatus comprising:

a reader for reading the RFID tags associated with a plurality of medical products placed in close proximity to the reader to obtain the data stored in the RFID tags; and

a processor coupled to the reader for processing the data obtained from the RFID tags to identify the medical products, wherein the reader is configured for substantially simultaneously reading a plurality of RFID tags associated with a plurality of medical products placed in close proximity to the reader.

47. The apparatus of claim 46, further comprising a display coupled to the processor, and wherein the processor controls the display to display the identified medical products.

48. The apparatus of claim 46, further comprising a network interface coupled to the processor, and wherein the processor is configured for transmitting the data obtained from the RFID tags using the network interface.

49. The apparatus of claim 48, wherein the processor is configured for receiving a notification via the network interface, in response to the transmission, indicating whether to administer the identified medical products.

50. The apparatus of claim 49, further comprising a display coupled to the processor, and wherein the processor is configured for displaying the received notification on the display.

51. The apparatus of claim 49, further comprising an output device coupled to the processor, and wherein the processor activates the output device when the received notification indicates that the identified medical products should not be administered.

52. The apparatus of claim 51, wherein the output device comprises at least one of a light indicator and an audio indicator.

53. The apparatus of claim 46, wherein the reader comprises an antenna mounted in an entrance to the patient's room, the antenna configured to read the

RFID tags associated with the medical products when the medical products pass through the entrance.

54. The apparatus of claim 46, further comprising a read pad, and wherein the reader comprises an antenna in the read pad for reading the RFID tags associated with the medical products when the medical products are placed in close proximity to the read pad.

55. A method for monitoring administration of a medical product to a patient, the medical product comprising a Radio Frequency Identification (RFID) tag for storing data related to the medical product, the method comprising:

reading the RFID tag associated with the medical product to obtain the data stored in the RFID tag when the medical product passes through an entrance to the patient's room;

accessing data associated with a patient; and

verifying that the patient is intended to receive the medical product by comparing the data obtained from the RFID tag with the data associated with the patient.

56. The method of claim 55, wherein the verifying step further comprises comparing a product identifier from the data obtained from the RFID tag with a product identifier from the data associated with the patient.

57. The method of claim 56, wherein the product identifier comprises at least one of a product name, a dosage, and a product serial number.

58. The method of claim 55, further comprising displaying a mismatch notification when there is a mismatch between the data obtained from the RFID tag and the data associated with the patient.

59. The method of claim 55, further comprising activating an output device when there is a mismatch between the data obtained from the RFID tag and the data associated with the patient.

60. The method of claim 55, further comprising reading the RFID tag associated with the medical product when the medical product is placed in close proximity to a read pad.

61. The method of claim 55, further comprising recording administration of the medical product to the patient when there is a match between the data obtained from the RFID tags and the data associated with the patient.

62. The method of claim 55, wherein the reading step comprises substantially simultaneously reading RFID tags associated with a plurality of medical products, and wherein the verifying step comprises verifying that each of the plurality of medical products is intended for the patient.

63. A method for monitoring administration of a medical product to a patient, the medical product comprising a Radio Frequency Identification (RFID) tag for storing data related to the medical product, the method comprising:

substantially simultaneously reading RFID tags associated with a plurality of medical products;

accessing data associated with a patient; and

verifying that the patient is intended to receive the medical product by comparing the data obtained from the RFID tag with the data associated with the patient, and wherein the verifying step comprises verifying that each of the plurality of medical products is intended for the patient.

64. The method of claim 63, wherein the verifying step further comprises comparing a product identifier from the data obtained from the RFID tag with a product identifier from the data associated with the patient.

65. The method of claim 64, wherein the product identifier comprises at least one of a product name, a dosage, and a product serial number.

66. The method of claim 63, further comprising displaying a mismatch notification when there is a mismatch between the data obtained from the RFID tag and the data associated with the patient.

67. The method of claim 63, further comprising activating an output device when there is a mismatch between the data obtained from the RFID tag and the data associated with the patient.

68. The method of claim 63, further comprising reading the RFID tag associated with the medical product when the medical product passes through an entrance to the patient's room.

69. The method of claim 63, further comprising reading the RFID tag associated with the medical product when the medical product is placed in close proximity to a read pad.

70. The method of claim 63, further comprising recording administration of the medical product to the patient when there is a match between the data obtained from the RFID tags and the data associated with the patient.

IX. EVIDENCE APPENDIX

Exhibit A – Chung U.S. Patent Publication No. US 2004/0036623 A1 dated February 26, 2004.

Exhibit B – Chung U.S. Provisional Application Serial No. 60/248,454 dated November 14, 2000

Exhibit C – Declaration of Christer O. Andreasson and Jimmy C. Caputo Under 37 C.F.R. §1.131

Exhibit D – Supplemental Declaration of Christer O. Andreasson and Jimmy C. Caputo Under 37 C.F.R. §1.131

REC'D 01 FEB 2002
WIPO PCT

PI 515933

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office

January 29, 2002

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: *60/248,454*
FILING DATE: *November 14, 2000*
PCT APPLICATION NUMBER: *PCT/US01/42563*

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS

L. Edelen

L. EDELEN
Certifying Officer

PRIORITY DOCUMENT
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PTO/SB/16 (12-97)
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

INVENTOR(S)		
Given Name (first and middle (if any))	Family Name or Surname	Residence (City and either State or Foreign Country)
KEVIN KWONG-TAI	CHUNG	PRINCETON, NJ

☐ *Additional inventors are being named on the ___ separately numbered sheets attached hereto*

TITLE OF THE INVENTION (280 characters max)

RFID TAGS, CONTACTLESS SMART CARD, CONTACT SMART CARD, MAGNETIC STRIPE, BARCODE AND THEIR COMBINATION SYSTEMS

(Rev. B November 14, 2000)

CORRESPONDENCE ADDRESS

Direct all correspondence to:

☐ Customer Number [ ] → *Type Customer Number here*

Place Customer Number Bar Code Label here

OR

[X] Firm or Individual Name	AMERASIA INTERNATIONAL TECHNOLOGY, INC.				
Address	PO BOX 3081				
Address					
City	PRINCETON	State	NJ	ZIP	08543-3081
Country	USA	Telephone	6097999388	Fax	6097999308

ENCLOSED APPLICATION PARTS *(check all that apply)*

[X] Specification *Number of Pages* 74 — [X] Small Entity Statement

[X] Drawing(s) *Number of Sheets* 15 — [X] Other (specify) Fee Transmittal

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT *(check one)*

[X] A check or money order is enclosed to cover the filing fees

☐ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number [ ]

FILING FEE AMOUNT ($): $75.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____

Respectfully submitted,

SIGNATURE _____ Date 11/14/00

TYPED or PRINTED NAME KEVIN K.T. CHUNG

TELEPHONE (609) 799-9388

REGISTRATION NO. *(if appropriate)* [ ]

Docket Number [ ]

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, DC 20231.

jc996 U.S. PTO 11/14/00

jc892 U.S. PTO 60/248454 11/14/00

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FEE TRANSMITTAL

Patent fees are subject to annual revision on October 1.
These are the fees effective October 1, 1997.
Small Entity payments must be supported by a small entity statement, otherwise large entity fees must be paid. See Forms PTO/SB/09-12.
See 37 C.F.R. §§ 1.27 and 1.28.

TOTAL AMOUNT OF PAYMENT ($) 75.00

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	
Examiner Name	
Group / Art Unit	
Attorney Docket No.	

METHOD OF PAYMENT (check one)

1. ☐ The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:

Deposit Account Number
Deposit Account Name

☐ Charge Any Additional Fee Required Under 37 C.F.R. §§ 1.16 and 1.17
☐ Charge the Issue Fee Set in 37 C.F.R. § 1.18 at the Mailing of the Notice of Allowance

2. ☒ Payment Enclosed:
☒ Check ☐ Money Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	790	201	395	Utility filing fee	
106	330	206	165	Design filing fee	
107	540	207	270	Plant filing fee	
108	790	208	395	Reissue filing fee	75.00
114	150	214	75	Provisional filing fee	
				SUBTOTAL (1)	($) 75.00

2. EXTRA CLAIM FEES

		Extra Claims		Fee from below	Fee Paid
Total Claims		-20** =		X	=
Independent Claims		- 3** =		X	=
Multiple Dependent					=

**or number previously paid, if greater; For Reissues, see below

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
103	22	203	11	Claims in excess of 20
102	82	202	41	Independent claims in excess of 3
104	270	204	135	Multiple dependent claim, if not paid
109	82	209	41	** Reissue independent claims over original patent
110	22	210	11	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet.	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	950	217	475	Extension for reply within third month	
118	1,510	218	755	Extension for reply within fourth month	
128	2,060	228	1,030	Extension for reply within fifth month	
119	310	219	155	Notice of Appeal	
120	310	220	155	Filing a brief in support of an appeal	
121	270	221	135	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,320	241	660	Petition to revive - unintentional	
142	1,320	242	660	Utility issue fee (or reissue)	
143	450	243	225	Design issue fee	
144	670	244	335	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Petitions related to provisional applications	
126	240	126	240	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	790	246	395	Filing a submission after final rejection (37 CFR 1.129(a))	
149	790	249	395	For each additional invention to be examined (37 CFR 1.129(b))	
				Other fee (specify)	
				Other fee (specify)	

*Reduced by Basic Filing Fee Paid SUBTOTAL (3) ($)0

SUBMITTED BY				Complete (if applicable)	
Typed or Printed Name	KEVIN K.T. CHUNG			Reg. Number	
Signature		Date	11/14/00	Deposit Account User ID	

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50254 U.S. PTO

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Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) & 1.27(c))–SMALL BUSINESS CONCERN

Docket Number (Optional)

Applicant, Patentee, or Identifier: _____
Application or Patent No.: _____
Filed or Issued: _____
Title: RFID TAGS, CONTACTLESS SMART CARD, CONTACT SMART CARD, MAGNETIC STRIPE, BARCODE AND THEIR COMBINATION SYSTEMS (Rev. B November 14, 2000)

I hereby state that I am
- ☐ the owner of the small business concern identified below:
- ☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN AMERASIA INTERNATIONAL TECHNOLOGY, INC.

ADDRESS OF SMALL BUSINESS CONCERN PO BOX 3081
PRINCETON, NJ 08543-3081

I hereby state that the above identified small business concern qualifies as a small business concern as defined in 13 CFR Part 121 for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time, or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby state that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention described in:

- ☐ the specification filed herewith with title as listed above.
- ☐ the application identified above.
- ☐ the patent identified above.

If the rights held by the above identified small business concern are not exclusive, each individual, concern, or organization having rights in the invention must file separate statements as to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization having any rights in the invention is listed below:
- ☒ no such person, concern, or organization exists.
- ☐ each such person, concern, or organization is listed below.

Separate statements are required from each named person, concern or organization having rights to the invention stating their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

NAME OF PERSON SIGNING KEVIN K.T. CHUNG

TITLE OF PERSON IF OTHER THAN OWNER PRESIDENT

ADDRESS OF PERSON SIGNING PO BOX 3081, PRINCETON, NJ 08543-3081

SIGNATURE _____ DATE 11/14/00

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RFID Tags, Contactless Smart Card, Contact Smart Card, Magnetic Stripe, barcode and Their Combination Systems

(Rev. B November 14, 2000)

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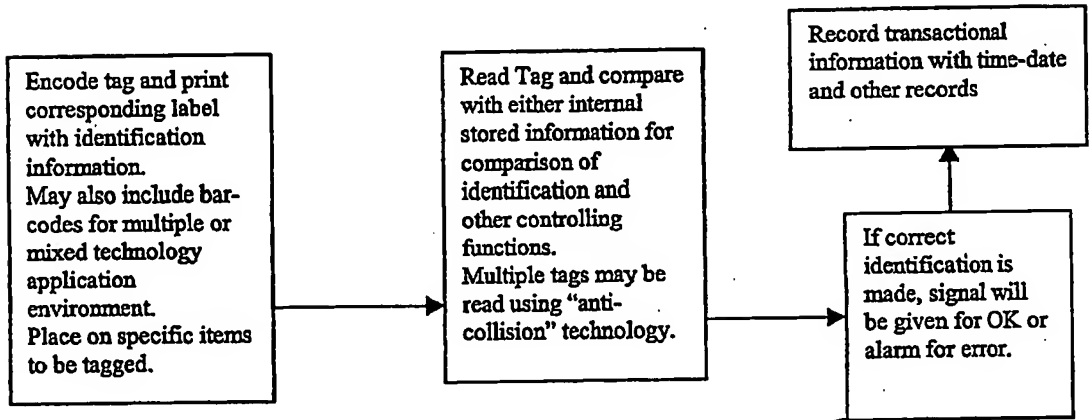
Tel: (609) 799-9388 Fax: (609)799-9308
Email: ait@aitechnology.com

0044445 4445 4445 4445

Additions to Rev. B

SOFTWARE AND HARDWARE INTERFACTION FLOW CHARTS FOR ACCESS-TYPE APPLICATIONS:



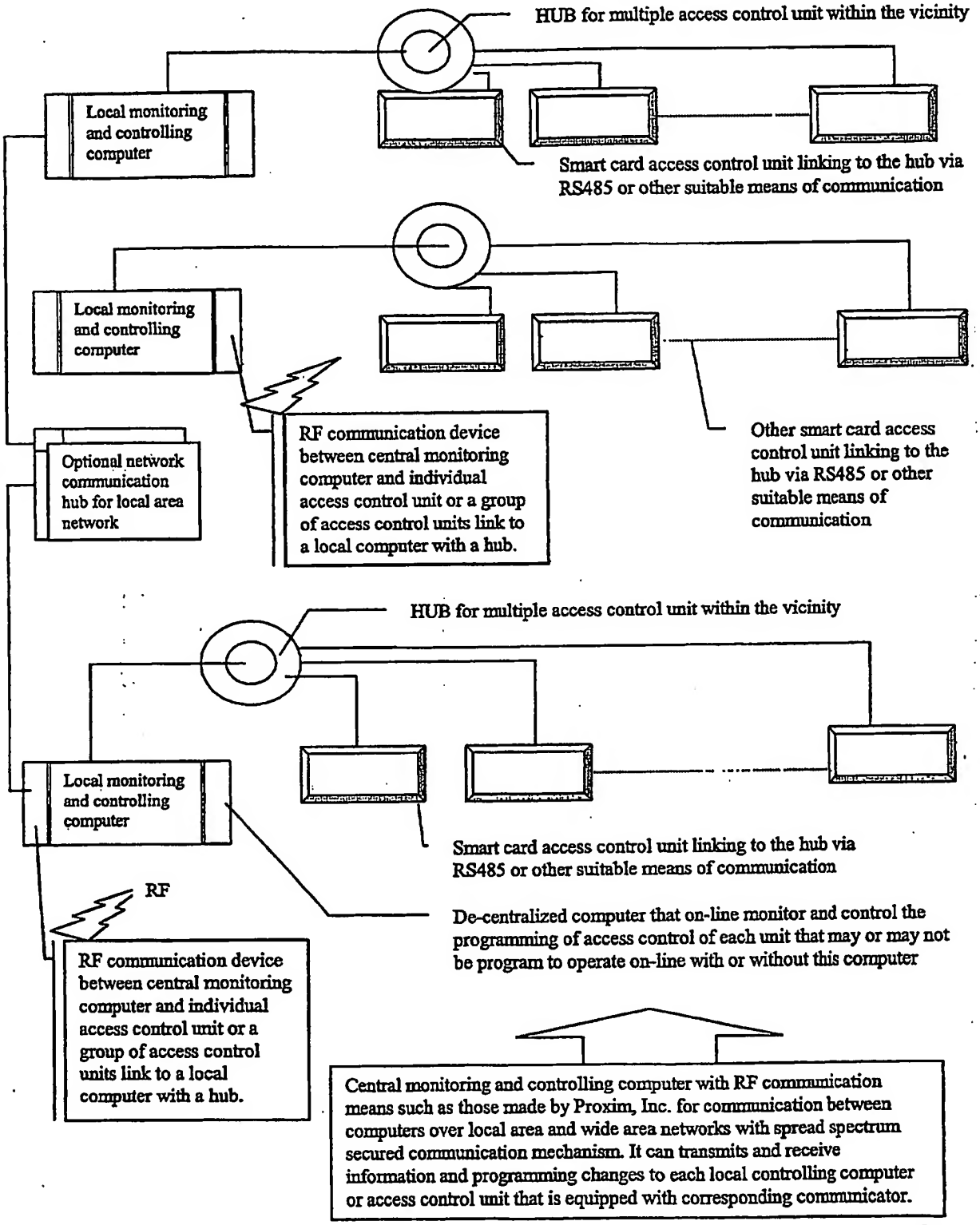
Updating access control relating to authorization changes or Program changes through suitable means such as:

1. **Hard-wire connection such as RS485 or other suitable means**
2. **In case of off-line operations; use of smart cards or handheld communicators to transmit the changes**
3. **Use of wire-less station such as those of CDMA or other wireless such as frequency-hopping spread spectrum communicators either directly from the central controlling unit or relay-link through other communicators. E.g.**
   - **"RangeLAN2 system operating at 2.4GHz by Proxim Inc. in Sunnyvale, CA**
   - **"Stratum" Building-to-Building system by Proxim Inc. in Sunnyvale, CA**
   - **"Symphony" Home and Small Office system by Proxim Inc. in Sunnyvale, CA**

If wireless communicators are used, the following logistics may be used:

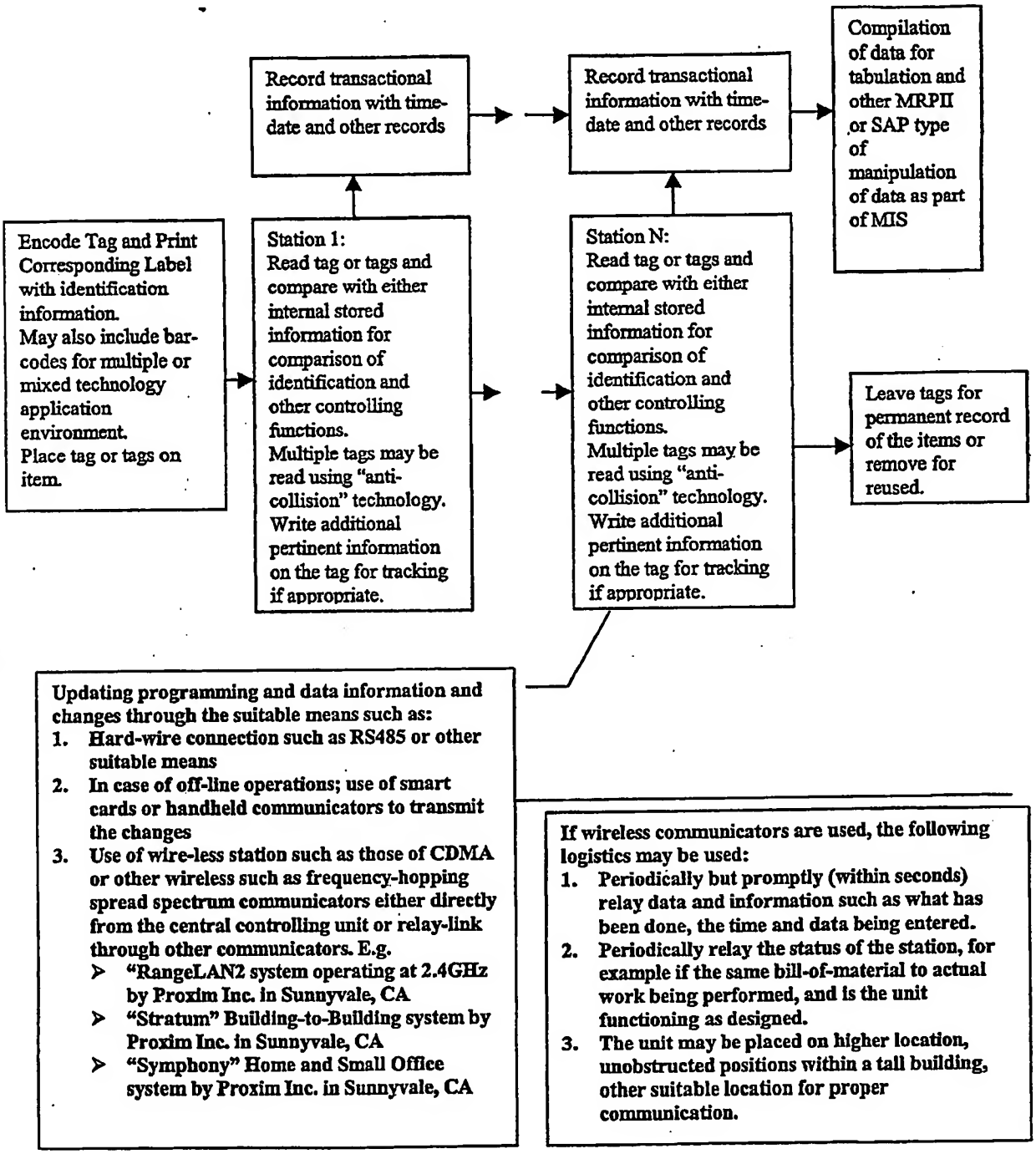
1. **Periodically relay access information such as who is gaining access, the time of access**
2. **Periodically relay the status of the lock or specific access, for example if the door is ajar or closed, is the unit functioning as designed.**
3. **The unit may be placed on higher location, unobstructed positions within a tall building, other suitable location for proper communication.**

Schematic representation of li[redacted]g local area access control units and ind[redacted]ident off-line access control units to the central monitoring [redacted]d control computer center via both wirele[redacted]nd optional wired c[redacted]ections. Depending on the location and ease of laying wired network, wireless communicators placed in suitable locations may be used to link large area of miles and tall building between floors, etc.



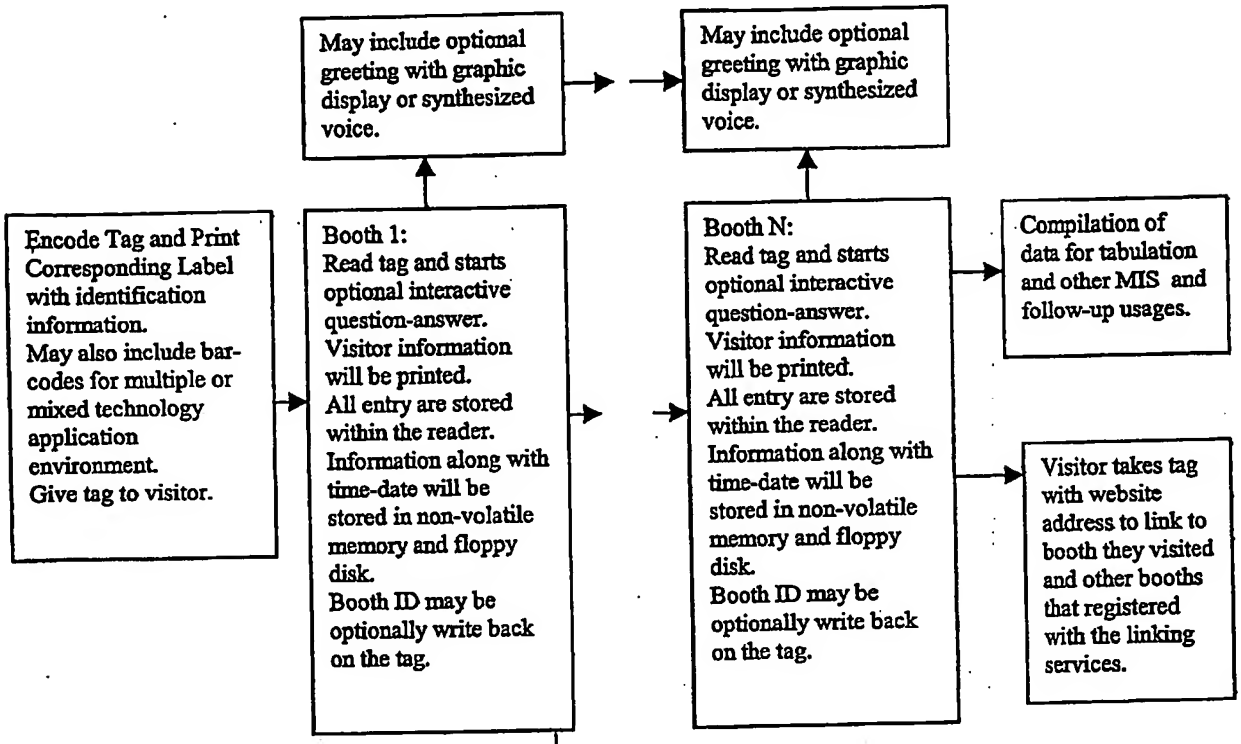
FTWARE AND HARDWARE INTERFACTION FLOW CHARTS FOR

MANUFACTURING, INVENTORY, AND TRANSPORTION TYPE APPLICATIONS:



TWARE AND HARDWARE INTERFACTION FLOW CHARTS FOR TRADE-SHOW

SALES LEADS GATHERING AND RETRIEVAL SYSTEM APPLICATIONS:



Updating programming and data information and changes through the suitable means such as:

1. **Hard-wire connection such as RS485 or other suitable means**
2. **In case of off-line operations; use of smart cards or handheld communicators to transmit the changes**
3. **Use of wire-less station such as those of CDMA or other wireless such as frequency-hopping spread spectrum communicators either directly from the central controlling unit or relay-link through other communicators. E.g.**
   - **"RangeLAN2 system operating at 2.4GHz by Proxim Inc. in Sunnyvale, CA**
   - **"Stratum" Building-to-Building system by Proxim Inc. in Sunnyvale, CA**
   - **"Symphony" Home and Small Office system by Proxim Inc. in Sunnyvale, CA**

If wireless communicators are used, the following logistics may be used:

1. **Periodically but promptly (within seconds) relay data and information such as what has been done, the time and data being entered.**
2. **Periodically relay the status of the station, for example if the same bill-of-material to actual work being performed, and is the unit functioning as designed.**
3. **The unit may be placed on higher location, unobstructed positions within a tall building, other suitable location for proper communication.**

RFID Tags, Contactless Smart Card, Contact Smart Card, Magnetic Stripe, barcode and Their Combination Systems

(Rev. A November 3, 2000)

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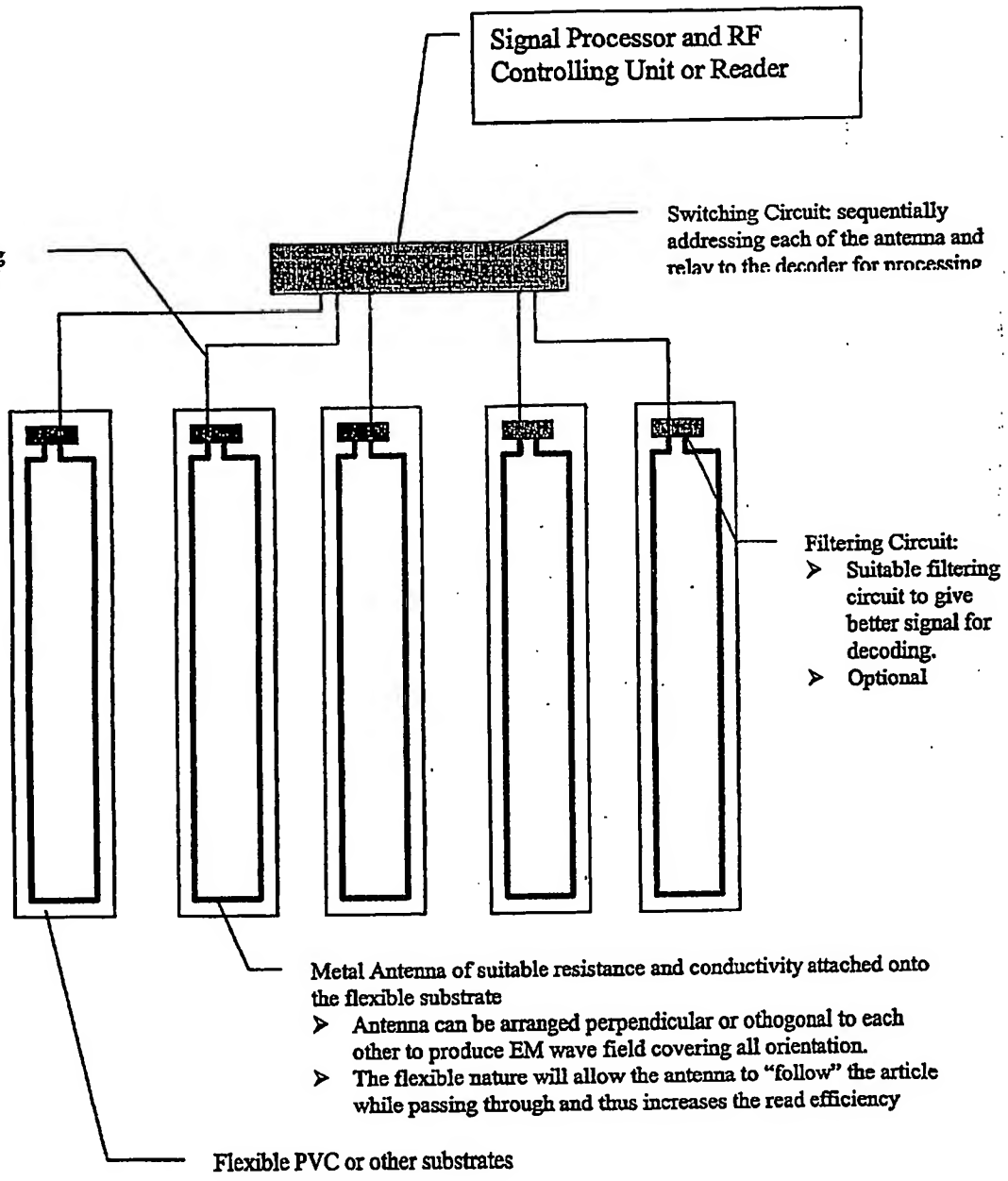
Email: ait@aitechnology.com

dition for Rev. C:

The making of antenna that is flexible and attached to substrate such as that of the PVC plastics used commonly as hanging flexible doorway is a major advances for application for variety of applications that was not possible before.



Other Dual Tag Applications:

Besides its usefulness for baggage claim and other shipping-transportation applications, the dual tag approach may also be used for applications that requires automatic identification and verifications.

For example, they can be readily adapted for use in dispensing medication to the patient. A RF reader/writer can be made to work with label maker. When doctor or other authorized person or authority written out their prescriptions, a tag with sufficient memory will be encoded along with the printed prescription. Many memory chips commonly used for RFID tags may be used. Obvious, there may be several tags each with individual chip for each of the medication or optionally with dosage and usage information. In case of one chip-tag to be used for a medication with several medicines, the memory may be segmented accordingly to as many as necessary for positive identification of such medications and its usage information. Such information will be encoded during the printing of the prescription.

Each type of pills and other forms of medicine in a larger containers will may contain sufficient tags with the proper encoding to be placed on individual and separate smaller bottles or other containers. When medications from such larger container is drawn, a label will be placed on the smaller containers along with the medication. These tags will be used to compare with the prescription tag after the pharmacist picks all of the medicine being prescribed.

When patient present such prescription with proper tag or tags to the pharmacist, the medications will be picked and labeled. The complete prescription drugs will then be given to the patient through a electronic reader gates with proper antennae array. Comparison of the drugs in each labeled containers will be made with the prescription, if wrong or missing or extra drugs

found, alarm will be made for correction. This serves as separate check against human error.

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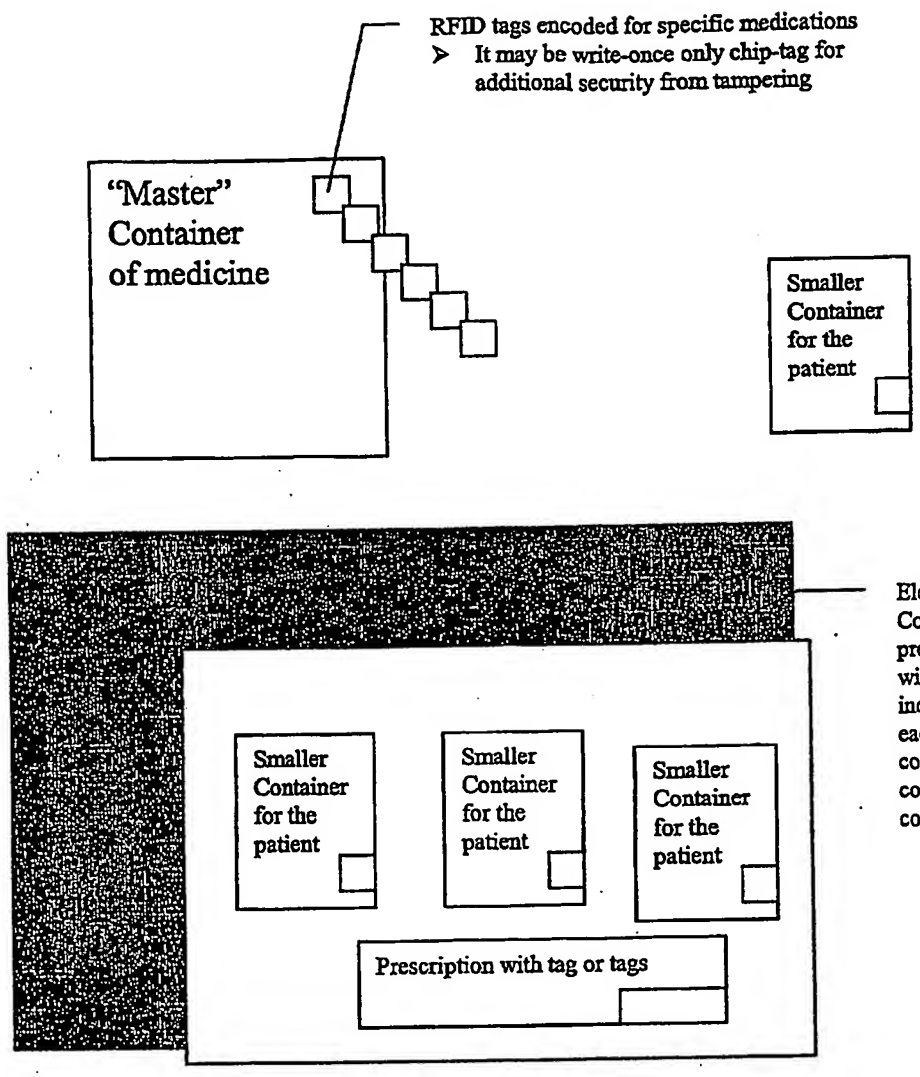
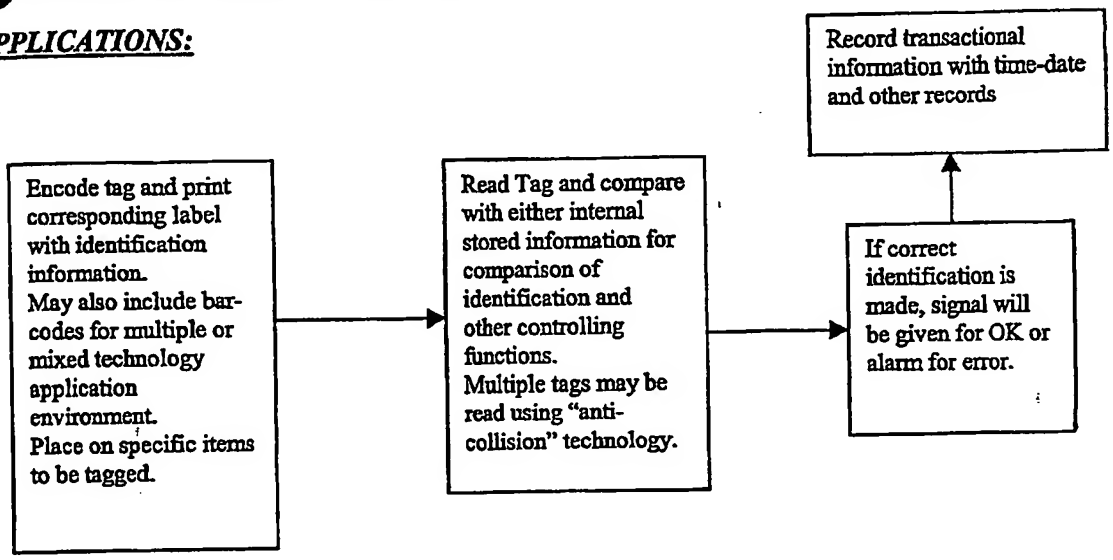
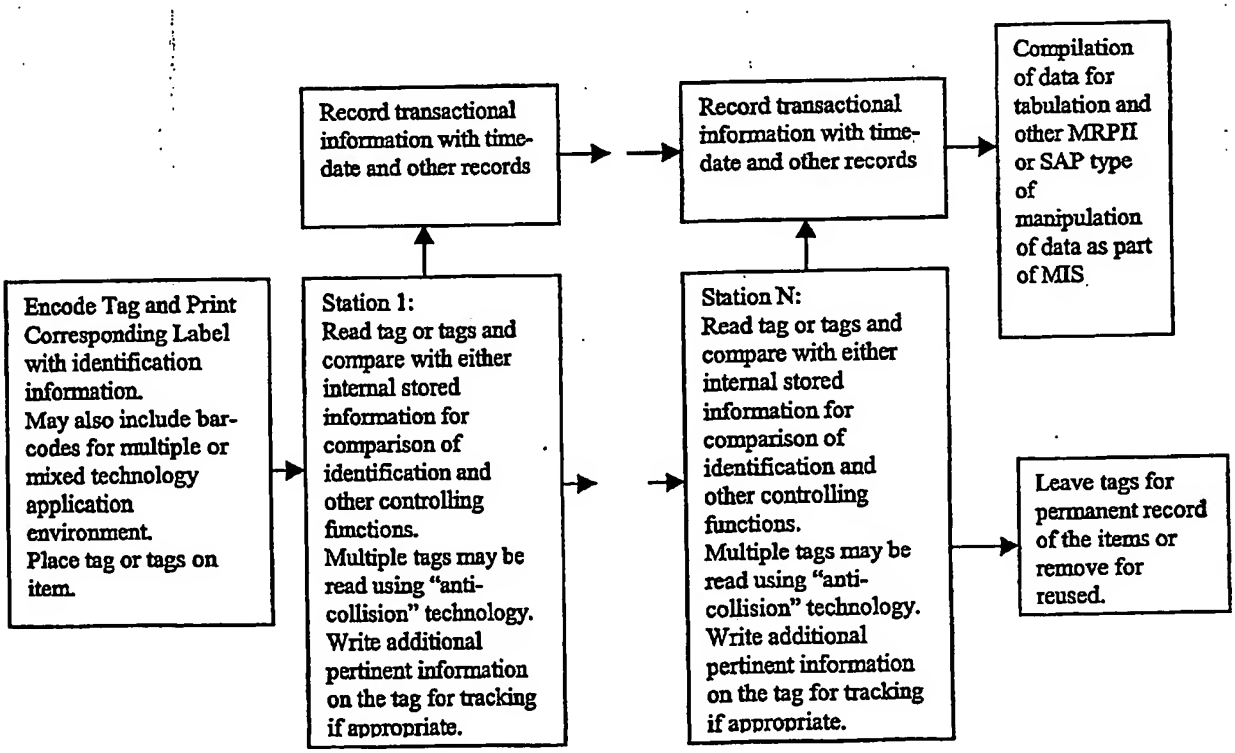


0011-4582-0203

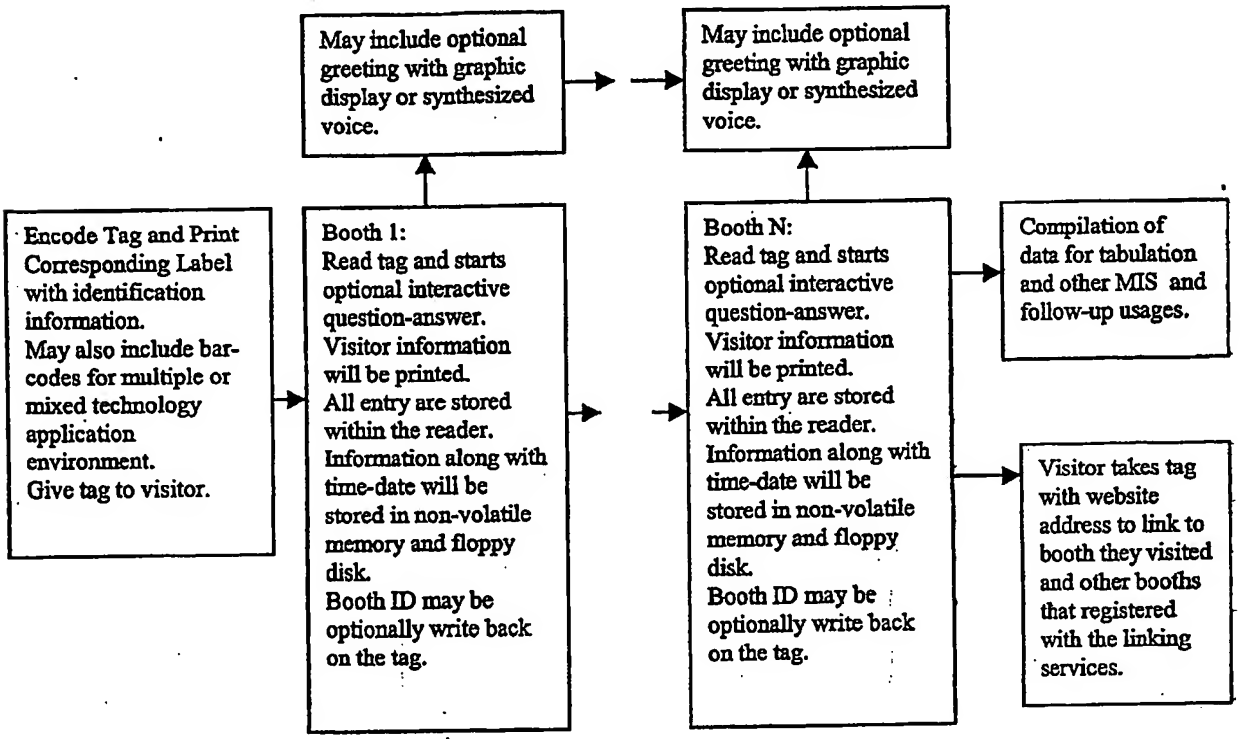
SOFTWARE AND HARDWARE INTERFACTION FLOW CHARTS FOR ACCESS-TYPE APPLICATIONS:



SOFTWARE AND HARDWARE INTERFACTION FLOW CHARTS FOR MANUFACTURING, INVENTORY, AND TRANSPORTION TYPE APPLICATIONS:



SOFTWARE AND HARDWARE INTERFACTION FLOW CHARTS FOR TRADE-SHOW SALES LEADS GATHERING AND RETRIEVAL SYSTEM APPLICATIONS:



Automatic Sales Leads Logging and Retrieval System, Inventory Control and Monitoring System, Manufacturing Work-in-Progress Tracking System, Automobile Toll Collection and Anti-Theft Control System with RFID Tags and Cards

(Rev. C November 3, 2000)

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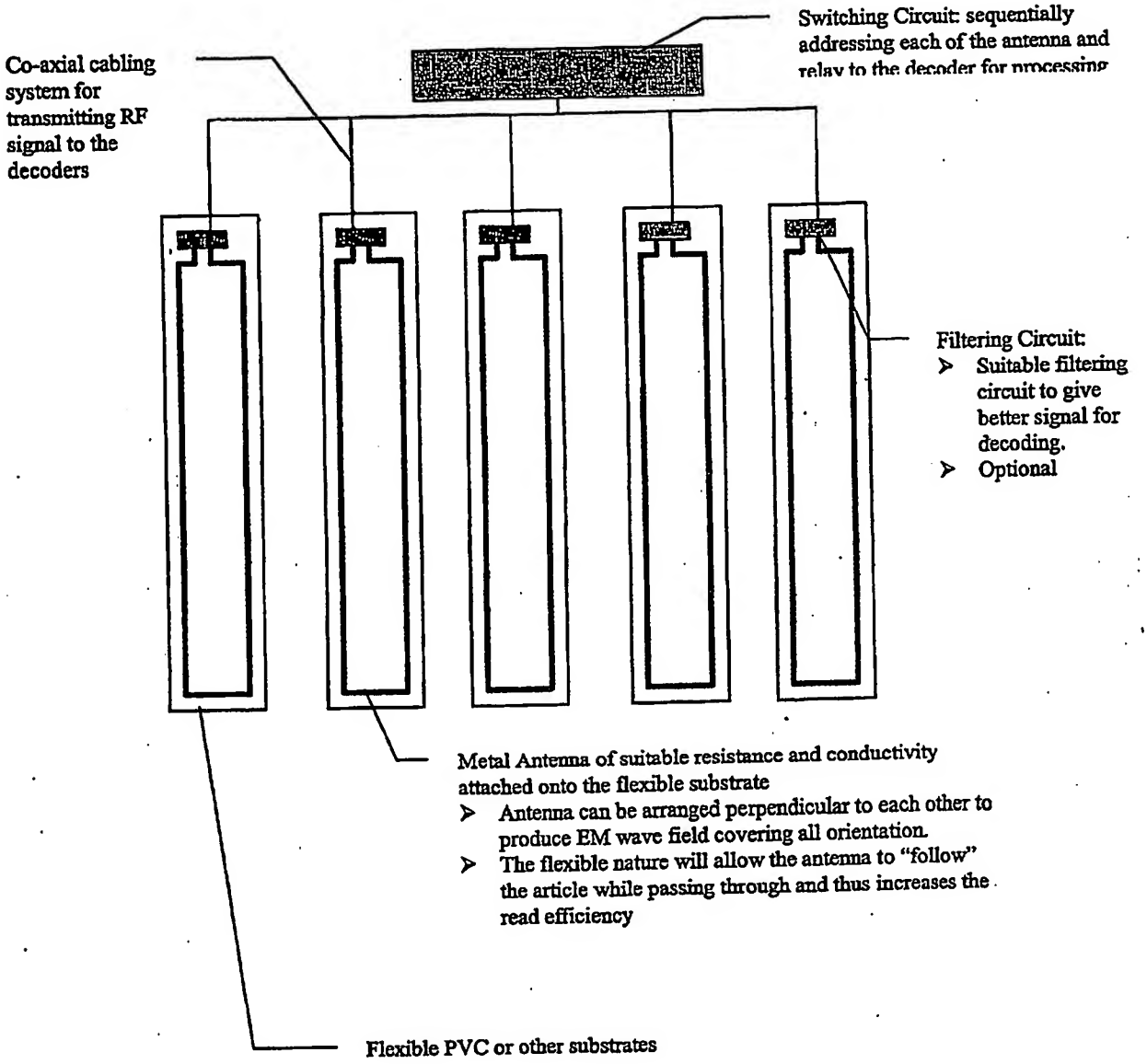
Addition for Rev. B:

The making of antenna that is flexible and attached to substrate such as that of the PVC plastics used commonly as hanging flexible doorway is a major advances for application for variety of applications that was not possible before.



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h this type of flexible antenna arrays, they can be arranged with field generated to be perpendicular to each other. The arrangement can be made with antennae oriented in any direction to give a complete coverage of tags. This is particular true that we can produce the effect of having the antenna effectively following the items when passing such antenna arrays of curtain. That is, it dramatically improved the efficiency of reading tags that are placed in ANY ORIENTATION, and in ANY POSITION.

Application besides the monitoring the inventory items, they can also be placed in any locations as electronic gates. Thus it can be used to identify vehicle for toll collection much like the current E-ZPASS and E-PASS systems using active tags. Active tags require changing of battery and special ways of attaching onto vehicle. The passive tags made with tag antenna size similar to smart card but in flexible format that can be easy attached onto any suitable position near the edge of automobile windshield will allow easy reading. In fact, using I-CODE chip with optimized antenna made by Avante International Technology, in Princeton Junction, New Jersey and a modified reader available from Philips with power increase from 5 watts to 30 watts, the read distance can easily be increase to more than 1-2 meter. If antennae are placed on both side of the gate, the lateral width can be easily increased to over 4 meters. With suitable hanging flexible antennae array, any size gate and any height vehicle can be monitored correctly.

Besides the toll collection for high ways or any similar applications, the same mechanism can be used for anti-theft applications. If decal or sticker is required for vehicle similar to registration decal, similar I-CODE tags can be placed behind the standard decal and attached onto windshield. If stolen vehicle is known, when they pass such gate, they can be readily pick-up and notify proper authority for recovery. If no decal is used, conventional electronic eyes can notify authority to stop such vehicle.

For anti-theft applications, tamper-destruct tags made by Avante International Technology and patent pending by the same inventor can be used. When any attempts is made to remove it for the purpose of using low cost car registration on the more expensive stolen vehicle is made impossible or very difficult.

Alternatively, the tag information can be display prominently to allow visual comparison of the tag and its true identity. Other methods and logistics can be used with similar results. The key is the use of the flexible reader that can be hanging to form an omni-direction readers. In fact, the fact that they can following the subject while passing through, can also be more useful for vehicle or objects with different shapes and structures.

Docket #5445

TRODUCTION

Trade shows are one of the most important channel for manufacturers or service providers to meet their customers face-to-face and discussed interests and applications. There are many ways to capturing the names and information of the customers when they stop by the booth. One of the simple ways is to exchange name cards. Another simple way is to have labels of mailing addresses printed by the tradeshow host for the visitors to give to the exhibitors. Still another old fashion method is to have a plastic card similar to the credit card but with embossing of the information useful to the exhibitors for follow up.

More automatic methods include the use of magnetic stripe cards and suitable readers. Still another method includes the use the bar-code method again with suitable reader for retrieval. Cost of magnetic stripe card is low in the range of $0.05 to $0.10 today. The cost for bar-code label is lower still. However, there is relatively few information that can be "embedded" in this type of media. Most of the information must be pre-stored into the reader that function like an independent small computer. Most the cases, they also provide printer for immediate print-out of the useful information. The cost of renting this type of simple device ranges from $250-350 each for a few days.

There are some drawbacks with the use of bar-code. They are typically difficult to read when such label is put into a plastic cover. It will be quite inconvenient if the traffic is heavy. In fact, it can take as many as few second to make successful reading of the more complicated bar-code with more information.

In the case of magnetic stripe card, the reading of it relatively quick and more than 90% successful first read if used properly. The only drawback is that if you do not use it properly with suitable swiping speed, your may have to repeat several times before you can actually log-in the

tors. The most important drawback besides the possible failure to read the first time is that the memory of the card or label made for such usage has very limited memory. If more information is required, there is basically no way to 'embed" these information in the card.

Thus, there is a great advantage to use card made with chip with suitable memory. While contact type memory card is relatively inexpensive in the range of $0.50 each, they are still inconvenient in the sense that they have to be taken out from the pocket for the booth staff to insert into the reader. More advantage can be created with contact-less cards that have sufficient memory. Recent development of usage of RFID or contact-less smart card allows smaller memory devices to have similar pricing to that of the contact-type cards.

It will be extremely useful for some operation using some form of "electronic gate" to automatically read and greet the incoming visitors. In this type of cases, an all-orientation reading capability is essential for the successes. This again requires an ingenious design of the antenna arrays.

Similarly, there is great demand for automatic electronic tracking of storage, in-coming and out-going automatic tracking, "bin" or location-assignment tracking, and other inventory related applications. For this type of application to be useful, minimum or 100% automatic without human intervention or error are essential. Bar-code usage while low cost requires line-of-sight operation by the operator is costly and likely to cause error. While RFID eliminate most of the line-of-sight problem, there is still some orientation problem depending on the flux incident on the antenna area of the smart tags. A special all-orientation "electronic gate" has been designed to solve this problem. One of the typical applications is for inventory control. Tags with different codes are placed on the items to be tracked. Thus inventory can be checked anytime

a suitable reader. Gating can be kept to keep track of items being taking out or move in. This is one of the designed usages of such smart tags.

In the manufacturing arena, there is a need to monitor progress and productivity. It will be extremely useful if each work-station will have some form of signature and time indication while the item is being work on by the specific operator. In this case, a reader that will read and co-ordinate the operator with the item being worked on, the time it takes to complete the task, and other relevant information. Such information may be read-write onto smart tag attach to carrying "tote". Such information is down-loaded onto the controlling computer at the end of the operation when the item is being unloaded from the "tote".

Typically shipping and receiving consists of paper documents that match the owners to the items being transported. The owner can be the shipper or authorized receiving party. In the more automatic and smaller value items; bar-coding with matching receiving tags may be used. However, because of the need for line of sight for the bar-code to be recognized and its ease of duplication, matching has to be performed manually or in some cases not checked at all.

More recently smart tag has been developed for tagging and reading electronically using contact-less radio frequency method. Such RF frequencies vary from hundred of KHz to GHz depending on the applications. In such smart tagging application, an integrated circuit in form of semiconductor chip is connected to suitable antenna to served as tag. The smart tag can be written and read with suitable reader or reader-writer system. The reader that is tuned suitably to the antenna of the tag will emit RF energy that through interaction with the tag will be able to identify the electronic codes embedded in the tag. Such contact-less RF approach eliminates the need of line-of-sight and is suitable for wide range of applications.

In some application, such as self-storage, we combined suitable electronic matching system utilizing two tags with partly or completely matching codes. When two tags are together within the read distance of the reader system, automatic authorization to retrieve will be given. If only non-matching tags or one tag is sensed, retrieval will be denied automatically. Of course, besides the remote, contact-less smart tags to be used, other traditional tagging such printed ID or bar-code can be used in conjunction with such smart tags if deemed desirable.

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Detailed Description of Invention for Tradeshow Leads Retrieval :

The process involved in trade show leads management can be summarized as below:

1. Customers or visitors are registered with ID information typically includes name, company, title, addresses, phone-fax, e-mail. The information may also include specific interest area of the visitor. ID cards or labels printed with name, company, etc. are printed and put in suitable batch holder. If bar-code of magnetic stripe electronic ID is used, they will be coded with specific relational data base serial number or in some case with suitable information directly related to information similar to those in the registration.

   In this invention, we use smart tags using "Mifare" chip, "I-Code" chip, or any other suitable chip for smart tags. They typically contain 128 bits or more read-write capability. In case of large memory, almost all relevant information of the visitor can be written into the tag or card. Smart tags are useful for direct printable label while smart card format allowed some post-show advertisement of the show or vendors.

2. When show visitor attends any booth of their interest, they will present their card or label to be scanned or swiped and stored into the specific reader. Sometimes, simple thermal printer is used to print out the information of the visitor. This print-out serves to confirm the receiving of such information as well as allowing the show staff to write interests and other relevant information for easier follow-up.

   In this invention, the special reader may be as simple as a box like structure where the tag or card will be brought close to within read distance of 1-30 inches depending on the tag antenna and power level of the reader. In other cases, a special all-orientation "electronic gate" may be made similar to access control gate reader. When the visitor walks through the gate, the reader will automatically read and greet the visitor with print-out, visual display, or

vocal greeting from the voice synthesizer. The readers will be built with sufficient memory to hold information up to the total number of attendees. This information may also be formatted and stored in a floppy or other electronic media for subsequent retrieval. This "friendly" automatic visitor attendance reader is part of this invention.

Several readers may be used at the same time for one single gate. Each of the reader may include a simple question and answer format to allow the visitor to indicate his interests specific to the vendor's show material. Thus a keypad or keyboard entry system may be used for such entry. Each of such information will also be stored into the data base for the specific customers. This special kiosk type interactive smart reader is part of this invention. In fact, these interactive readers may be linked to a single RFID or smart card reader through electronic hub similar to linking up many computer to a network computer.

This type of multiple kiosks linking to reader-detector can be easily arranged for an automatic trade-show attendance where no or very few booth attendees are needed to manage most of the traffic. The staff can selectively help those most important to the organization or those that may have specific questions.

3. The "greeting" feature of such automatic leads retrieval system can be expanded into large LCD or LED display. In fact, if necessary, the display can even direct the visitor to specific interactive kiosk station. In some cases, vocal greeting using voice synthesis available readily from multiple commercial sources. They can even be translated and incorporated for different languages.
4. When the show is over, the reader will be returned to the show managing organization. The specific information of the visitors of the specific booth will be compiled and print-out using a typical computer and printer. Typically, part of the print out may in the format of label for

mailing purposes. Additional information concerning the customer's interests can be printed separately for more efficient sales follow up.

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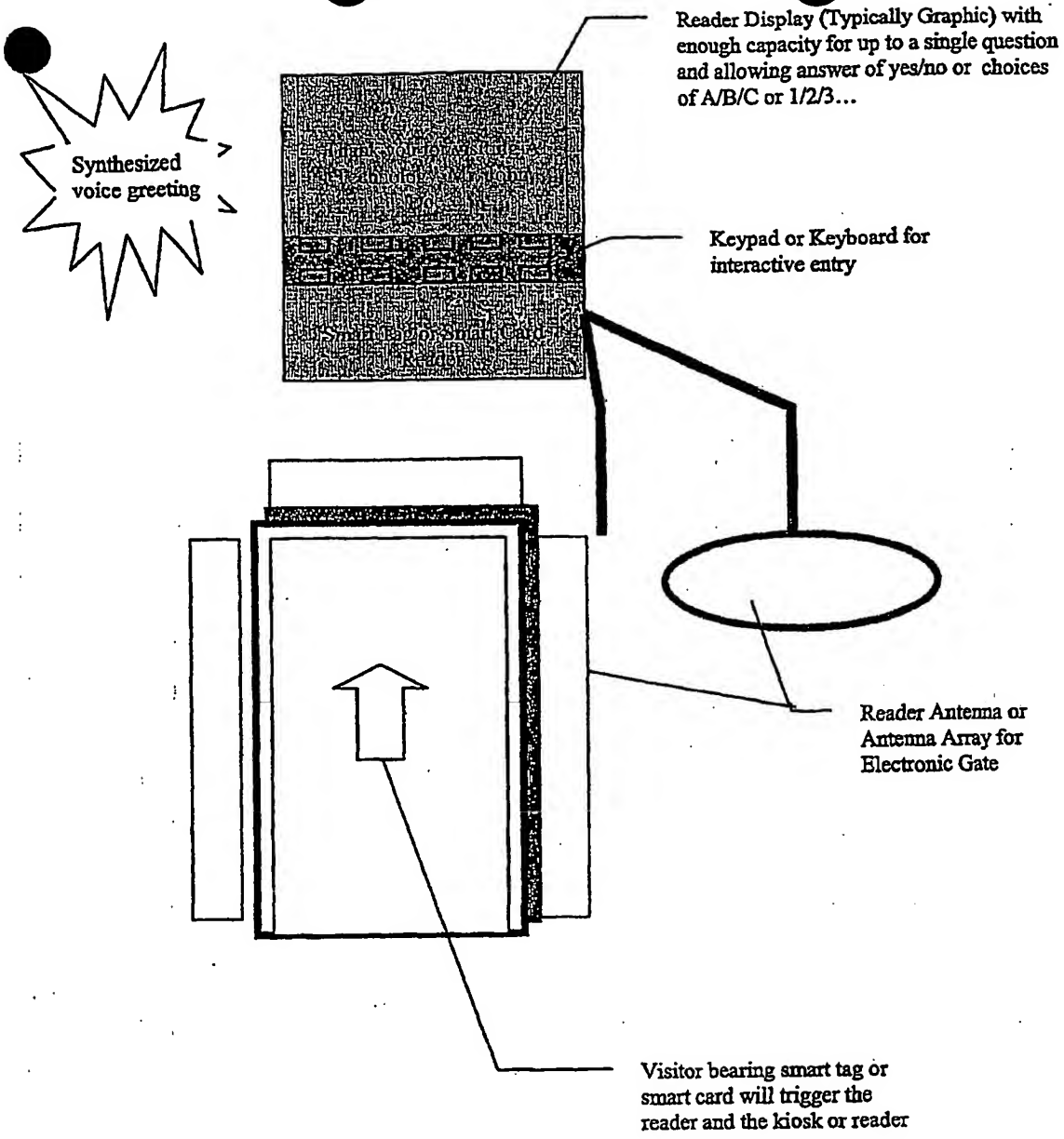

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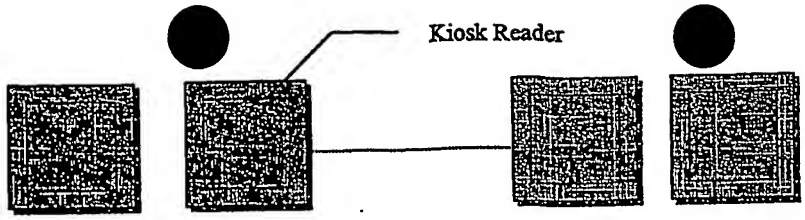
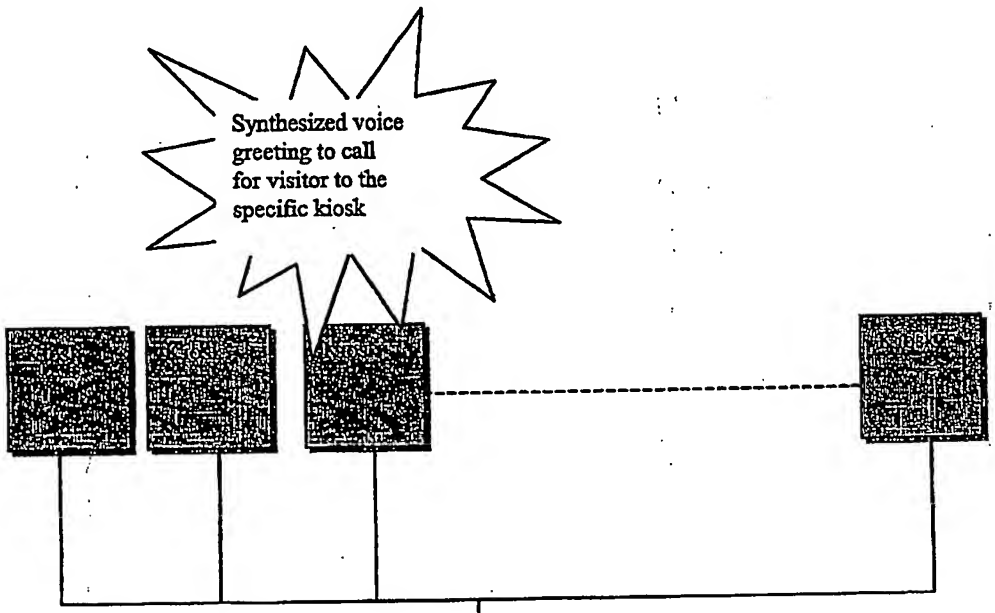
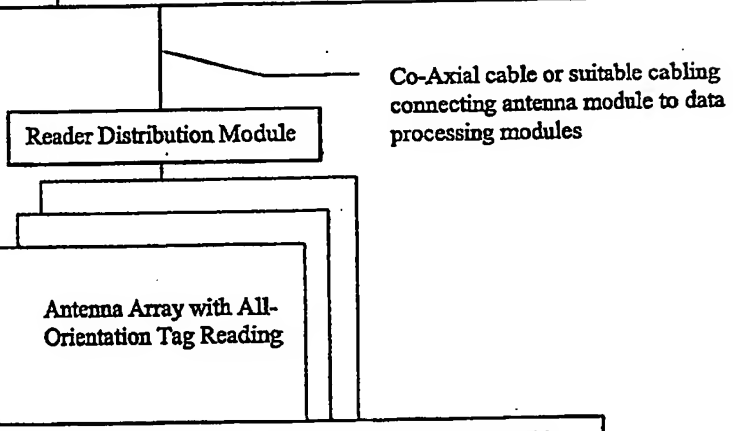


Model 1: Individual or linked reader-processing unit for kiosk type interactive function





Model 2: Multiple interactive kiosks can be linked to an "electronic gate" lined with multiple antenna array to achieve all-orientation reading capability. The individual kiosk will be activated when a visitor passes through the gate. If the kiosk is busy, it will then automatically shift to next available kiosk.

Claims for Tradeshow Attendance and Sales Leads Management

1. A trade-show attendance and sales leads management information and operation system comprises of RFID smart tag identifying show attendees or visitors;

a system of at least one reader in the form of simple proximity electronic sensor or electronic pass through gate with an array of antennae that at one generating electromagnetic field substantially perpendicular and one generating electromagnetic field substantially parallel to the exit-entry direction;

and said field generated has enough intensity to be effective in reading such smart tag with any orientation when passed through this electronic pass through gate, a computer with software to automatically record the time of visit, and information of said visitors and their interests.

2. A trade-show attendance and sales leads management information and operation system of claim 1;

wherein said smart tag is operating at frequencies of 2.45GHZ, 915MHz, 13.56 MHz, 125KHz, and other suitable frequencies that a semiconductor can made to respond to.

3. A trade-show attendance and sales leads management information and operation system of claim 1; wherein said antenna array includes at least two antennae in the form of flexible panel to form an electronic curtain that generate electromagnetic field parallel to that of the exit or entry direction.

4. A trade-show attendance and sales leads management information and operation system of claim 1; wherein said electronic gate is linked to a series of interactive kiosk station through a switching hub; whereas such kiosk has a display and programmable messaging to ask a series

of question related to the visitor's interests; such input of the visitors in form of selections of answers can be listed to provided for subsequent follow up.

5. A trade-show attendance and sales leads management information and operation system of claim 1; wherein said antenna array are activated sequentially but rapidly so that any electromagnetic field generated will not be interfering with each other, and rapidly in less than seconds such that the monitoring of tagged visitors will be read within normal movement of said visitors through such antennae array.

6. A trade-show attendance and sales leads management information and operation system of claim 1;

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Claims for Time-Attendance and Messaging Management Information System

1. A time-attendance management information and operation system comprises of RFID smart tag in suitable form for carrying as personal identification, a system of at least one reader in the form of electronic pass through gate with an array of antennae that at least one generating electromagnetic field substantially perpendicular and at least one generating electromagnetic field substantially parallel to the exit-entry direction, and said field generated has enough intensity to be effective in reading such smart tag with any orientation when passed through this electronic pass through gate, a computer with software to automatically record the in and out time information, and computation of time of attendance.

2. A time-attendance management information and operation system of claim 1; wherein said reader comprises of at least an array of antenna with electromagnetic field pointing at directions orthogonal to each other and at least one of them parallel to the entrance-exit direction, internal non-volatile memory sufficient to record time-attendance records of more than 1000, and more preferably more than 10,000 employee-event without connection to the main computer or during power failure.

3. A time-attendance management information and operation system of claim 1; wherein said reader also incorporate a display that will be able to broadcast events related to individual employees and all or groups of employees without connection to main computer, said display can be graphic LED or LCD or voice, or a printout, or a standard CRT monitor, or other suitable form of media.

4. A time-attendance management information and operation system of claim 1; wherein said smart tag is operating at frequencies of 2.45GHZ, 915MHz, 13.56 MHz, 125KHz, and other suitable frequencies that a semiconductor can made to respond to.

A time-attendance management information and operation system of claim 1; wherein said smart tag on said unit serves as personal identifications in relationship to work assignment and other management categorization.

6. A time-attendance management information and operation system of claim 1; wherein said system includes warehouse storage with storage bin that have been lined with an array of antennae that allows automatic reading of tagged items with any orientation of the tags within such bin.

7. A time-attendance management information and operation system of claim 1; wherein said antenna array includes at least two antennae in the form of flexible panel to form an electronic curtain that generate electromagnetic field parallel to that of the exit or entry direction.

8. A time-attendance management information and operation system of claim 1; wherein said antenna arrays are used for entrance-exit of functional unit of work areas, wherein said time-attendance records may be used for monitoring job costing of each functional groups.

9. A time-attendance management information and operation system of claim 1; wherein said antenna arrays are used for entrance-exit of accesses to general and functional unit of work areas, wherein said employee ID is used as access control and access records of the particular work areas.

10. A time-attendance management information and operation system of claim 1; wherein said antenna array are activated sequentially but rapidly so that any electromagnetic field generated will not be interfering with each other, and rapidly in less than seconds such that the monitoring of employee will be read within normal movement of said items through such antennae array.

A time-attendance management information and operation system of claim 1; wherein said smart tag and reader unit is used in conjunction with other form of electronic monitoring unit so that if staff enter or exit without proper ID smart tag or improper access will be noted and suitable alarm or signal be given at site and recorded in the reader.

12. A time-attendance management information and operation system of claim 1; wherein said readers with their respective antennae arrays can be linked through the network connection of at least one hub either in series or parallel to main computer for on-line monitoring.

13. A time-attendance management information and operation system of claim 1; wherein said work units and work areas are divided into zones; wherein said zones are lined with antennae array such that any person with smart tag ID within the zone will be readable by said reader; and said zones with sequential activation of array and individual antenna all accounts of staff may be known at all time.

14. A time-attendance management information and operation system of claim 1; wherein said software comprises of relational data bases such as "Access" from Microsoft, "Oracle", Informix, Sybase, or other suitable software system.

Detailed Description of Invention for Time and Attendance, Inventory Management, and Manufacturing Tracking System Retrieval :

The process involved in time-attendance and manufacturing process with multiple operational stations may be summarized as below:

- An employee or operator is given a smart card/tag. In this case, it will be much more convenient to use RFID technology to achieve contact-less long-term usage. Obviously each of this card may contain serial number assigned to such individual plus any other information that may be used for other applications within the system of usage.
- Each work-in-progress is tag with a smart tag/card either directly on suitable area of the product to be made or on tote box carrying such product during manufacturing. Those that use "tote" will facilitate multiple usage of the tag. Those that attached onto the product may be staying with product as part of product tagging to facilitate servicing in the field.
- For the ease of usage, same smart tags with slight different configurations may be used so that the reader can monitor both the product and who worked on it, at what time for how long.
- Depending on the memory size of the smart tag, they may be suitable segments for recording the following information: the operators of each station, when was the work done, how long did it take, and other information the operator want to encode to help denoting specific issue of the operation if an interactive kiosk type station is used, etc.
- Again, in this application, a suitable antenna array with all-orientation read-write capability for the reader is particularly useful for products that have different shape and size. This reader-antenna array may be used as electronic gate for each station. If time of processing is

important, there may be "entry gate" and "exit gate" for each station. Alternatively, if time of travel is short between station, time of passage into each station may be used to monitor the time during each operation. This information helps to monitor the productivity as well as potential issue in each manufacturing process. Interactive kiosk type reader may be used to help input any information that may help the management of the product quality.

- If necessary, from the station of work and its manufacturing function, bill-of-material can be reconciled. If more material is used, the employee can use the station kiosk to input such information. This will help to eliminate the discrepancy between the actual bill-of-material and theoretical bill-of-material.
- With the "all-orientation" antenna array and sequential technique of addressing and activating each antenna, there are several benefits that can be realized in the manufacturing environment. If reader is used in each items or "tote" containing multiple items, when they are removed, the number of items, the time and rate of usage can be documented. The actual inventory can be obtained anytime. This information is both useful for users and vendors to ensure just-in-time and other inventory management. To save cost of equipment, each bin equipped with multiple antenna arrays for all orientation reading can be linked through a hub that the driver or activating the individual antenna can be made. Thus one reader can be used to read multiple bin and find out exactly what is in the bin at any time.
- The information on material used in manufacturing and inventory control may be directly used for standard MRPII or manufacturing resource/requirement planning. These data can of course in turn be used for other management information system in enterprise resource planning.

- The same employee smart tag can be used as time-clock when they arrive and depart from the facility with either smaller reader or "electronic gate". In fact, special messaging display or print out can be used to help deliver special instruction or work order of the day to specific employee.

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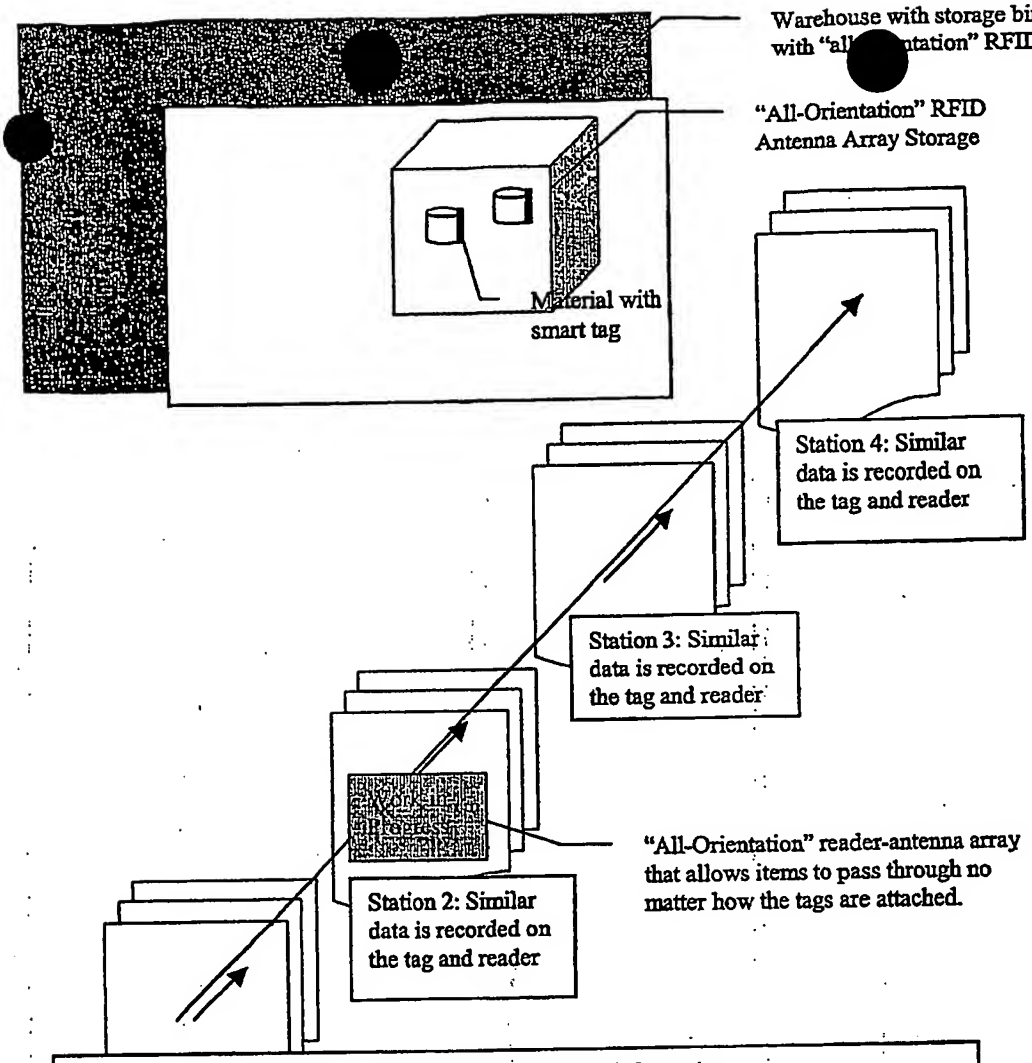


Station 1: Both tag and reader will record the following information:

- Product arrival time is recorded
- Operator and operation process code is recorded to derived the bill-of-material.
- If kiosk is set-up with proper information entry capability, the operator can input special information such extra material used, or special observations through choices of various defects, etc.
- If "entry and exit gates" are used, the time elapsed during operation is recorded.

Manufacturing Process Monitoring System:

- Smart tags are attached onto unit to be built. In case of more expensive material, they can be also tagged either in unit level or "tote" level with fixed multiple units.
- Each work station may be incorporated with in-coming and out-going reader that can be same reader with sequential activation of the "all-orientation" antenna arrays placed "in front" and "behind" the operator station. Each station may be coded with specific operation that may be directly related to the material usage. Other quality or waste factor may be reported with reader equipped with keypad/keyboard interactive ability.
- Productivity, idol time, and other efficiency factors can be derived with data recorded automatically with the unit passing through each station.

Smart Tags for All Environments of Manufacturing:

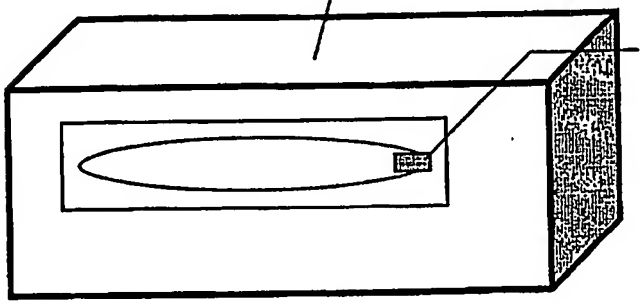
While majority of smart tags is used for tracking items at ambient conditions, some of the applications related to manufacturing can quite extreme. For example, during the manufacturing process, the unit of assembly can undergo extreme high temperature, extreme corrosive or chemically active conditions, and other condition that most tags will not survive.

High Temperature and Chemical Resistant Tag:

For some application, the temperature of the tag items can reach as high as 220-300°C for a few minutes at a time such as soldering operations, etc. Most semiconductor can survive these temperature for reasonable hours of up to 100-500 hrs. However, most substrate and interconnection technology may not be able to tolerate such temperatures without major modification.

It will be much easier if the basic electronic tag can be protected from direct contact with such conditions. The following approach is a relatively easy and low cost method to lengthen the useful time of such tag. The key is to prevent the harsh condition of high temperature or cold temperature of extremes of less than –65C or harsh chemical from actually reaching such tag.

In case of both high temperature and harsh chemical, the following protective casing can be very effective.



Claims for Manufacturing ,Warehousing-Shipping and Inventory Management:

1. A manufacturing management information and operation system comprises of RFID smart tag attached to a manufacturing unit;

   a system of at least two readers with antennae array that is designed to read such smart tag with any orientation passing through;

   a computer with software to automatically record the operations and tight-in with the bill-of-material and other suitable management information systems.

2. A manufacturing management information and operation system of claim 1; wherein said manufacturing unit when passing through said reader with said antennae array forming a pass through electronic gate lined with said antennae array with electromagnetic wave generating sequentially to read all inventory units automatically when passing through.

3. A manufacturing management information and operation system of claim 1; wherein said manufacturing unit passes through two electronic gates for each station of operation; wherein when passing through said reader with said antennae array forming a pass through electronic gate lined with said antennae array with electromagnetic wave generating sequentially to read all manufacturing units automatically.

4. A manufacturing management information and operation system of claim 1; wherein said smart tag on said manufacturing unit when working in conjunction with said reader; said reader being interactive with query and answers; serves as measure of operational efficiency and quality recording device.

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A manufacturing management information and operation system of claim 1; wherein said antenna array includes at least one antenna that generate electromagnetic field parallel and one antenna that generate electromagnetic field perpendicular to that of the exit or entry direction.

6. A manufacturing management information and operation system of claim 1; wherein said antenna array includes at least two antennae in the form of flexible panel to form an electronic curtain that generate electromagnetic field parallel to that of the exit or entry direction.

7. A manufacturing management information and operation system of claim 1; wherein said smart tag is operating at frequencies of 2.45GHZ, 915MHz, 13.56 MHz, 125KHz, and other suitable frequencies that a semiconductor can made to respond to.

8. A manufacturing management information and operation system of claim 1; wherein said manufacturing unit retains said smart tag after manufacturing; wherein said antenna arrays are used for monitoring units movement and storage including the following: warehouse entry and exit gates, warehouse storage bins, transportation means entry and exit gates, transportation storage bins, receiving party entry and exit gates, and other useful path of unit movements.

9. A manufacturing management information and operation system of claim 1; wherein said antenna array are activated sequentially but rapidly so that any electromagnetic field generated will not be interfering with each other, and rapidly in less than seconds such that the monitoring of tagged units will be read within normal movement of said units through such antennae array.

A manufacturing management information and operation system of claim 1; wherein said smart tag is packaged inside an container that isolate the thermal increase to less than 150°C within 60 minute even when temperature of manufacturing is over 300°C.

11. A manufacturing management information and operation system; comprises of RFID smart tag attached to a manufacturing unit;

a system of at least one reader in the form of electronic pass through gate with an array of antennae that at one generating electromagnetic field substantially perpendicular and one generating electromagnetic field substantially parallel to the exit-entry direction;

and said field generated has enough intensity to be effective in reading such smart tag with any orientation when passed through this electronic pass through window;

a computer with software to automatically record the manufacturing operations in terms of time, operation bill-of-material, and/or interactive operational records.

12. A manufacturing management information and operation system of claim 11; wherein said smart tag is operating at frequencies of 2.45GHZ, 915MHz, 13.56 MHz, 125KHz, and other suitable frequencies that a semiconductor can made to respond to.

13. A manufacturing management information and operation system of claim 11; wherein said antenna array includes at least two antennae in the form of flexible panel to form an electronic curtain that generate electromagnetic field parallel to that of the exit or entry direction.

14. A manufacturing management information and operation system of claim 11; wherein said system includes warehouse storage with storage bin that have been lined with an array of antennae that allows automatic reading of tagged items with any orientation of the tagged manufactured units within such bin.

A manufacturing management information and operation system of claim 11; wherein said antenna arrays are used for monitoring units movement and storage including the following: warehouse entry and exit gates, warehouse storage bins, transportation means entry and exit gates, transportation storage bins, receiving party entry and exit gates, and other useful path of unit movements.

16. A manufacturing management information and operation system of claim 11; wherein said antenna array are activated sequentially but rapidly so that any electromagnetic field generated will not be interfering with each other, and rapidly in less than seconds such that the monitoring of tagged units will be read within normal movement of said units through such antennae array.

17. A manufacturing management information and operation system of claim 11; wherein said smart tag is attached to the items in either permanently, or temporarily.

18. A manufacturing management information and operation system of claim 11; wherein said antennae array may be activated to take inventory of the units at both display locations and warehouse locations with sequential activation of array and individual antenna through the network connection of at least one switching hub.

19. A manufacturing management information and operation system of claim 11; wherein said electronic gate is large enough for customer walking through, typical forklift, pallet, and other typical warehousing transportation means, to pass through, and inventory data can be collected while the customer with multiple items are passing through.

20. A manufacturing management information and operation system of claim 11; wherein said smart tag is packaged inside an container that isolate the thermal increase to less than 150°C

within 60 minute even when temperature of manufacturing is over 300°C; and/or preventing chemical attack on said smart tag.

21. A manufacturing management information and operation system of claim 1;

wherein said smart tag is made with polyimide substrate;

wherein said antenna is made with solid copper conductor traces;

wherein said interconnection pads are made with precious metal such as nickel-gold;

wherein said interconnection between chip and antenna are made with conductive adhesive that can withstand 200°C for at least 100 hours; and mechanical fastener that can withstand the same exposure.

Client's Docket No. 5th8th2009

Detailed Description of Invention for Inventory and Retail Management:

The process involved in retail and inventory operation may be summarized as below:

1. Each sales item may be tagged with individual smart tag when they are received.
2. Depending on the value of the items, in some cases, reusable tag much similar to these anti-theft tags used in clothing retail stores made by Check-Point System in Thorofare, New Jersey can also be used. Instead of the anti-theft tag, they will be replaced with smart tag but with similar means of attaching to the clothing or other items that requires special tool to remove. The inside can be incorporated with the smart tag made with Philips I-Code chip and made in form factor that fit into similar anti-theft device.
3. The smart tag in this case is RFID passive tag such as those operating at 13.56MHz or other commonly used frequency. The tag can be segmented to incorporate all relevant information concerning the item such as "universal product code", specific made, specific model, specific piece, pricing, and any other relevant information to useful for the management.
4. The newly invented "all-orientation" antenna array may be used to construct storage bins in the storage area. In fact, with innovative decoration, the large volume space enclosed inside the antenna array may be used to show case the products for customer selection. Thus all products within the store and storage area are known at all time. The antenna arrays are built structurally with antenna wiring and relatively inexpensive to incorporate. Only limited reader electronic module is needed with the use of the sequential activation method over a controlled hub.
5. The special "all-orientation" antenna array can also be easily incorporated in the check out counter. While the items pass through the counter, all of the information within the tag is downloaded into the computer. The tally of the purchase is automatically performed. If

necessary, the memory inside the smart tag can be erased for security and inventory control. The smart tags are removed with the special mechanical device same as when used as anti-theft device. The passing of the item through the electronic gate is much faster and scanning of bar-code is eliminated.

6. Additional "electronic gate" incorporating multiple antenna array for "all-orientation" tags may be used for anti-theft control just the same way as conventional anti-theft device. Thus cost of incorporating inventory, sales tally, are actually less than if one were to use bar-code scanner and anti-theft device separately.
7. If employees are given smart tag with different information as employee ID, sales of any specific transaction can be directly linked to individual employee. In fact, system can be programmed to be nonfunctional if the staff is not within 2-5 feet of the counter of the "all-orientation" antenna array.
8. If loyalty program is used with customer given the same smart tag converted into smart card embedded with customer specific information, the "electronic gate" with the antenna array can be used to recognize the custom and given special greeting in form of graphic display using LCD, LED, or other suitable display. If desirable, even voice greeting can be incorporated. The loyalty card can of course be recognized during the transaction and special information such as loyalty credit may be coded into the customer's loyalty smart tag-card.
9. The above management information system combining anti-theft with detailed item tracking, sales tallying without scanning, employee transaction tracking, and/or loyalty program can only be effected with the special "all-orientation" antenna array. The method of doing business is of course of significant value in time saving for both inventory and sales effort.

The combination of these software and hardware for the smart tag are more efficient than any other system today.

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Claims for Retail Management:

1. A retail management information and operation system comprises of RFID smart tag attached to items to be sold, a system of at least one readers that are designed to read such smart tag with any orientation when passed through the reader antennae array forming a pass through electronic window, a computer with software to automatically record the inventory information and the tally of sales.

2. A retail management information and operation system of claim 1; wherein said smart tag on said item serves as anti-theft device with an electronic gate formed with antennae array capable to read tags with any and all orientation.

3. A retail management information and operation system of claim 1; wherein said system also includes display means including shelves and bins that have been lined with antenna array to allow reading of smart tags placed in any orientation within said display.

4. A retail management information and operation system of claim 1; wherein said system includes warehouse storage with storage bin that have been lined with an array of antennae that allows reading of tagged items with any orientation of the tags within such bin.

5. A retail management information and operation system of claim 1; wherein said smart tag can be read with said smart tag within the volume of spaced lined with said antennae array.

6. A retail management information and operation system of claim 1; wherein said antenna array includes at least one antenna that generate electromagnetic field parallel and one antenna that generate electromagnetic field perpendicular to that of the exit or entry direction.

7. A retail management information and operation system of claim 1; wherein said antenna array includes at least two antennae in the form of flexible panel to form an electronic curtain that generate electromagnetic field parallel to that of the exit or entry direction

A retail management information and operation system of claim 1, wherein said smart tag is operating at frequencies of 2.45GHZ, 915MHz, 13.56 MHz, 125KHz, and other suitable frequencies that a semiconductor can made to respond to.

9. A retail management information and operation system of claim 1; wherein said antenna array are activated sequentially but rapidly so that any electromagnetic field generated will not be interfering with each other.

10. A retail management information and operation system of claim 1; wherein said antenna array are activated sequentially but rapidly so that any electromagnetic field generated will not be interfering with each other, and rapidly in less than seconds such that the monitoring of tagged items will be read within normal movement of said items through such antennae array.

11. A retail management information and operation system comprises of RFID smart tag attached to items to be sold, a system of at least one reader in the form of electronic pass through window with an array of antennae that at one generating electromagnetic field perpendicular and one generating electromagnetic field parallel to the exit-entry direction, and said field generated has enough intensity to be effective in reading such smart tag with any orientation when passed through this electronic pass through window, a computer with software to automatically record the inventory information and the tally of sales.

12. A retail management information and operation system of claim 11, wherein said smart tag is operating at frequencies of 2.45GHZ, 915MHz, 13.56 MHz, 125KHz, and other suitable frequencies that a semiconductor can made to respond to.

A retail management information and operation system of claim 11; wherein said smart tag on said item serves as anti-theft device with an electronic gate formed with antennae array capable to read tags with any and all orientation.

14. A retail management information and operation system of claim 11; wherein said system also includes display means including shelves and bins that have been lined with antenna array to allow reading of smart tags placed in any orientation within said display.

15. A retail management information and operation system of claim 11; wherein said system includes warehouse storage with storage bin that have been lined with an array of antennae that allows reading of tagged items with any orientation of the tags within such bin.

16. A retail management information and operation system of claim 11; wherein said smart tag can be read with said smart tag within the volume of spaced lined with said antennae array.

17. A retail management information and operation system of claim 11; wherein said antenna array includes at least two antennae in the form of flexible panel to form an electronic curtain that generate electromagnetic field parallel to that of the exit or entry direction

18. A retail management information and operation system of claim 11; wherein said antenna array are activated sequentially but rapidly so that any electromagnetic field generated will not be interfering with each other.

19. A retail management information and operation system of claim 11; wherein said antenna array are activated sequentially but rapidly so that any electromagnetic field generated will not be interfering with each other, and rapidly in less than seconds such that the monitoring of tagged items will be read within normal movement of said items through such antennae array.

A retail management information and operation system of claim 1 and claim 11, wherein said smart tag is attached to the items in either permanently, or temporarily, or temporarily but must be removed with special tools that is not generally available to the public.

21. A retail management information and operation system of claim 1 or claim 11, wherein said antennae array may be activated to take inventory of the items at both display locations and warehouse locations with sequential activation of array and individual antenna through the network connection of at least one switching hub.

22. A retail management information and operation system of claim 1 or claim 11, wherein said electronic window and said electronic gate is large enough for customer walking through, and sales tallying and inventory data can be collected while the customer with multiple items are passing through.

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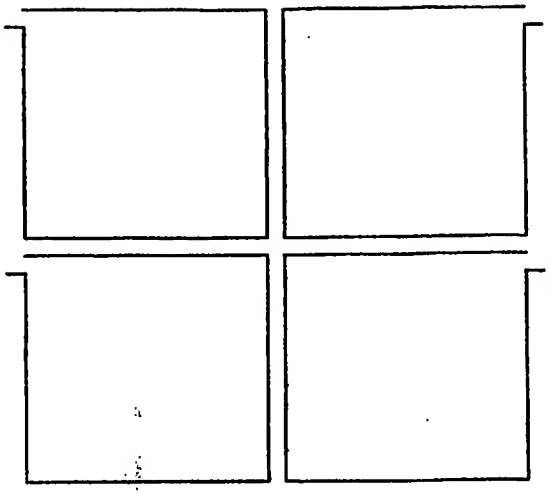
Detailed Description of Invention for Inventory and Shipping Management:

The process involved in shipping and inventory operation may be summarized as below:

1. Depending on the application, smart tag may be incorporated onto individual item to be transported or several items is incorporated into "tote", crate, box, pallet, or other suitable shipping container. Staff, vehicle, destinations, and storing locations can all be equipped with similar smart tags for automatic data collection. All suitable smart tags with corresponding readers and antennae can be used.
2. The special "all-orientation" antenna array is constructed to form "electronic gate" and "electronic cage". The "electronic gates" are incorporated in all entry and exit zones within the shipping and receiving party location. They are further incorporated in suitable entry and exit zones of transportation means such as vehicle, truck, train, ship, and airplane.
3. The "electronic cage" is constructed to enclosure of network of multiple antenna array with EM flux pointing in all directions including the entry-exit directions. Large area of antenna can be created for specific frequency and power level. In fact, we have found that for a simple lope antenna of 10 square feet, when folded to form antenna of 5 square feet, the efficiency of the antenna is approximately reduced by 20-40%.
4. In fact, a special network of flexible antenna array can be constructed to form a large area of coverage as illustrated in the following Figure. In fact, a special curtain using such array of antenna can be used to form both environmental passage way as well as counting items going in and out of the entrance or exit. An array of parallel antennae and perpendicular antenna can easily form an "all-orientation" antenna array for reading item with smart tag that may be oriented in any direction.

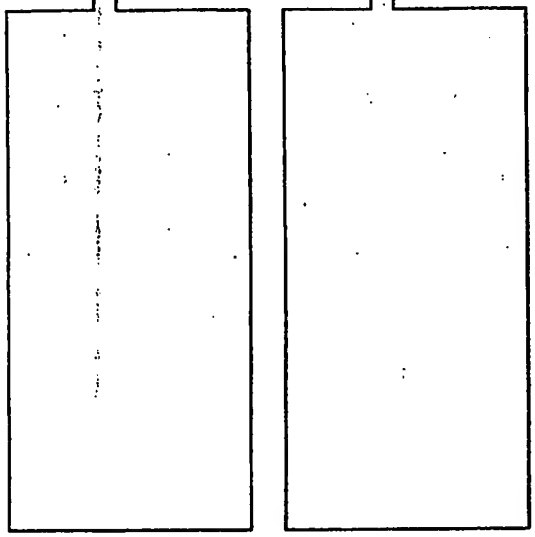
Items with smart tags put into storage area can be automatically counted with specific information relating to the individual items or groups of items in a box, crate, tote, pallets, etc.

6. When tagged items is removed and loaded into transportation means, the "electronic gate" will document all items being loaded and at what time, and even by whom.
7. By the same token, when such items are unloaded, they will be documented automatically with time of exit and by whom. If location of unloaded is required, location code may be entered into the reader before the unloading. Thus which items got dropped off to who in what location at what time can all be automatically recorded.
8. If empty containers such as crate, pallets, etc. are to be returned, the same information of time, by whom, and where may be documented with operator entering suitable code or command before loading and during unloading of such containers.
9. If necessary, special "electronic cage" can be constructed within the warehouse and the transportation vehicle for easy identification and recovery. They can be very useful for more automatic management of first-come, first-out principle for time sensitive goods.



- Independent antennae forming an array
- Each of the plane can be constructed with similar array to increase the area and enclosed volume of space in forming an "electronic cage".
- These independent antenna may be "knitted" together to form a "net with antenna activated independently and sequentially to avoid needing higher power and interference between field generated by each antenna and thus reduces the effectiveness of the array.
- Electronic net form with the array of antenna can be used to "count" items enclosed. Thus it is useful for counting items in pallets or piles of items.

Independent antennae forming an array



- Array of antennae each sequentially activated can be used to increase the area along one plane.
- If flexible wiring are used, they can be used like curtain or forming an actual curtain when items are being transported into and out of the enclosed entrance or exit.
- Curtain like array is particularly useful for entrance and exit. In fact, they can be built as part of the flexible plastic curtain.
- Each of the antenna may be activated independent to avoid interference.
- The sequential activation of antenna may be coordinated with a distribution hub that can easily coordinated with the antenna position.

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Claims for Warehousing-Shipping and Inventory Management:

1. A warehousing-shipping and inventory management information and operation system comprises of RFID smart tag attached to an inventory unit comprising of individual item or group of items to be stored, a system of at least one reader with antennae array that is designed to read such smart tag with any orientation, a computer with software to automatically record the inventory information.

2. A warehousing-shipping and inventory management information and operation system of claim 1; wherein said inventory unit when passing through said reader with said antennae array forming a pass through electronic gate lined with said antennae array with electromagnetic wave generating sequentially to read all inventory units automatically when passing through.

3. A warehousing-shipping and inventory management information and operation system of claim 1; wherein said inventory units is stored within electronic bin lined with antennae array with electromagnetic wave generating sequentially to read all inventory units automatically.

4. A warehousing-shipping and inventory management information and operation system of claim 1; wherein said smart tag on said inventory unit serves as anti-theft device with an electronic gate formed with antennae array capable to read tags with any and all orientation.

5. A warehousing-shipping and inventory management information and operation system of claim 1; wherein said smart tag and multiple tagged inventory units can be read with said smart tagged units are within the volume of spaced lined with said antennae array automatically.

6. A warehousing-shipping and inventory management information and operation system of claim 1; wherein said antenna array includes at least one antenna that generate

electromagnetic field parallel and one antenna that generate electromagnetic field perpendicular to that of the exit or entry direction.

7. A warehousing-shipping and inventory management information and operation system of claim 1; wherein said antenna array includes at least two antennae in the form of flexible panel to form an electronic curtain that generate electromagnetic field parallel to that of the exit or entry direction.

8. A warehousing-shipping and inventory management information and operation system of claim 1; wherein said smart tag is operating at frequencies of 2.45GHZ, 915MHz, 13.56 MHz, 125KHz, and other suitable frequencies that a semiconductor can made to respond to.

9. A warehousing-shipping and inventory management information and operation system of claim 1; wherein said antenna arrays are used for monitoring units movement ans storage including the following: warehouse entry and exit gates, warehouse storage bins, transportation means entry and exit gates, transportation storage bins, receiving party entry and exit gates, and other useful path of unit movements.

10. A warehousing-shipping and inventory management information and operation system of claim 1; wherein said antenna array are activated sequentially but rapidly so that any electromagnetic field generated will not be interfering with each other, and rapidly in less than seconds such that the monitoring of tagged units will be read within normal movement of said units through such antennae array.

11. A warehousing-shipping and inventory management information and operation system comprises of RFID smart tag attached to an inventory unit comprising of individual item or group of items to be stored, a system of at least one reader in the form of electronic pass through gate with an array of antennae that at one generating electromagnetic field

substantially perpendicular and one generating electromagnetic field substantially parallel to the exit-entry direction, and said field generated has enough intensity to be effective in reading such smart tag with any orientation when passed through this electronic pass through window, a computer with software to automatically record the inventory information.

12. A warehousing-shipping -inventory management information and operation system 11; wherein said smart tag is operating at frequencies of 2.45GHZ, 915MHz, 13.56 MHz, 125KHz, and other suitable frequencies that a semiconductor can made to respond to.

13. A warehousing-shipping -inventory management information and operation system 11; wherein said smart tag on said unit serves as anti-theft device with an electronic gate formed with antennae array capable to read tags with any and all orientation.

14. A warehousing-shipping -inventory management information and operation system 11; wherein said system includes warehouse storage with storage bin that have been lined with an array of antennae that allows automatic reading of tagged items with any orientation of the tags within such bin.

15. A warehousing-shipping -inventory management information and operation system 11; wherein said antenna array includes at least two antennae in the form of flexible panel to form an electronic curtain that generate electromagnetic field parallel to that of the exit or entry direction.

16. A warehousing-shipping and inventory management information and operation system of claim 11; wherein said antenna arrays are used for monitoring units movement and storage including the following: warehouse entry and exit gates, warehouse storage bins, transportation means entry and exit gates, transportation storage bins, receiving party entry and exit gates, and other useful path of unit movements.

A warehousing-shipping -inventory management information and operation system 11; wherein said antenna array are activated sequentially but rapidly so that any electromagnetic field generated will not be interfering with each other, and rapidly in less than seconds such that the monitoring of tagged units will be read within normal movement of said items through such antennae array.

18. A warehousing-shipping -inventory management information and operation system 11; wherein said smart tag is attached to the items in either permanently, or temporarily, or temporarily but must be removed with special tools that is not generally available to the public.

19. A warehousing-shipping -inventory management information and operation system 11; wherein said antennae array may be activated to take inventory of the items at both display locations and warehouse locations with sequential activation of array and individual antenna through the network connection of at least one switching hub.

20. A warehousing-shipping-inventory management information and operation system 11; wherein said electronic gate is large enough for customer walking through, typical forklift, pallet, and other typical warehousing transportation means, to pass through, and inventory data can be collected while the customer with multiple items are passing through.

Detailed Description of Invention for Binary-Tag System:

The use of binary or dual serial smart tags have been discussed for transportation and in this particular case for luggage during the flight from location A to designation B. In other cases, serial binary or multiple tags for the same items can useful for convenient of retrieval.

For example, if the tag items are placed inside a storage area where EM wave is not capable to penetrate for reading. Another example will be that the storage area is very large for any meaningful construction of inventory reading antennae array.

One simple example will be to tag the items with one tag while the binary tag is placed outside the storage area in a simulated chart for easy retrieval. One good example is important documents, special items, etc. The storage area may be metal bin that cannot be accessed by the reader unit. The process of using multiple tags for the same items can be visualized below.

1. Print out tags (binary, tertiary or other suitable logistical number) for each item to be stored or track during transportation. **In case of binary-tag system,** even though in some cases, the chip in each smart tag may have different serial number, they can be matched with written serial number that are the same for both tags. One of the smart tags behind the printed label and go on the baggage as usual. The companion smart tag is placed in suitable area simulating the storage position of the items. The smart tags may contain additional information that may be serve as meaningful reminders, staff that handle the storage, etc.

   Additional "gates" may be placed to log the path before loading onto the storage bin in confirmation of storage of such items. Each electronic "gates" are equipped with RFID reader arrange in suitable location to automatically read and monitor the flow of such tagged items. Information of tagged items and its flow path can be feed into data base of

central computer for easier tracking. Such data base should be interactive with other parts of the tag tracking. **Special all orientation antenna arrays and sequential activation reader may be built into storage areas or even inside the airplane for easy tracking of baggage anytime.**

This system of binary-tagging and "all-orientation" reader is also usable for single-use or multi-use of tags. They can be readily integrated with any electronic storage inventory reconciliation system, delivery system, off-loading and on-loading system. When item is taken from the storage areas, an "electronic" gate can be placed immediately upon the exit and rerouting the items if necessary.

2. When someone retrieve or pick up the items with the tag, one of the extra tag can serve as the claim check with the matching smart tag can be used for automatic retrieval. One of the methods is to program the "gate" reader to look for matching tags. If no matching tag is read, a signal or alarm should be given for proper monitoring.
3. **Same smart tag technology or can be made into employee ID card and use it to monitor the staff that work at specific electronic gate for the specific time, the efficiency and productivity of their work, etc. This monitoring system will increase the security and accountability of items handling.**

It should be clear the method described above that the dual tags with matching serial numbers are essential for labor saving claiming of items and increase the security if desirable. The smart tag with proper information help to eliminate line-of-sight reading of other tags and thus increase of the speed of flow. In fact, automation with robot pick up and placement.

Reader Configuration:

Typical smart tag has a chip attached to the antenna of right frequency response to the reader. The tags are usually flexible and can be placed behind a printable label of some sorts. While reader is typically a single loop antenna that are matched to the electronic driver and receiver sections. The reader sends out RF signal at the designated frequency of 13.56MHz, 125 KHz, 915MHz, and 2.45GHz. The signal will interact with the tag and return a signal to the reader for reading and writing of the tag.

Typically, higher the power level, the longer distance can be used for the reader and tag read/write. Normal power may be in the range of 1-10 watts. The read/write distance also depends on the tag construction. For example, tags made with antenna using flip-chip Chip-Coupler technology of AI Technology, Inc. in Princeton, NJ have been demonstrated to have high sensitivity and can be constructed with varying sizes with similar responsiveness to the reader.

Two or more separate antennae can be constructed with one or separate reader electronic module so that they can be sampling zones within the reader "gate" area to expand the coverage of the reader. For example, if two antennae are used each covering 20 inches of read distance from right and left side of walk-in gate, the gate can be as wide as 40" for normal entry. Similarly, top and bottom antennae can be added to create an electronic "gate" to capture all items with tags placed in different part of the "gate".

Figure 1: Antenna Array for Wider Electronic Gate(This array with antennae field perpendicular to the direction of baggage movement are most sensitive for tag with antenna area oriented parallel to the movement direction)

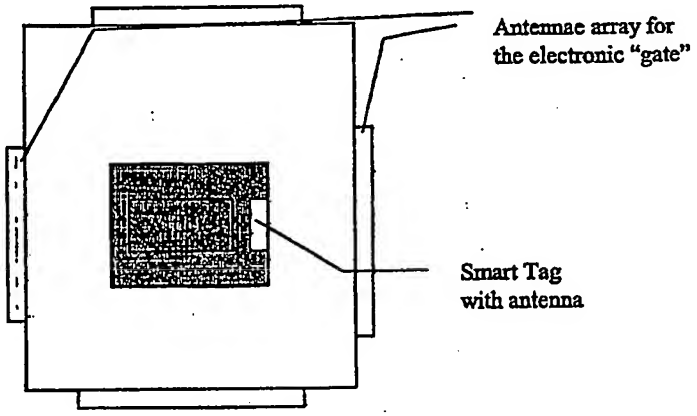

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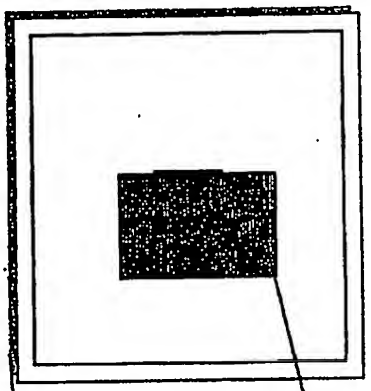
Figure 2: Antenna Array for Wider Electronic Gate (Antennae array with field covering tag antenna area oriented perpendicular to movement direction.)



Baggage with Smart Tag Antenna Area Perpendicular to the Movement Direction

Antennae array with field covering tag antenna area oriented perpendicular to movement direction. The antennae of the reader may be tilted 90°-45° to cover wider range of tag orientation. Again, sequential activation of each antenna within second helps to eliminate interference of field from each antenna.

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ta Base and Data Communication:

The current data base system of tracking baggage can be used. Instead of the data entry with bar-code or other means of tagging including written serial numbers. The data and serial number will be read with RFID reader or electronic "gate". The data and the location of readers will help to track the location and track of travel for the baggage. Additional data of sensing electronic gates may be added for the tracking the items during the complete route of travel.

Typical data base such as "Oracle", "Informix", "Access", etc. may be used depending on the complexity and size of the data base. Commercial inventory software such SAP may be adopted for use for this type of tracking.

The software language may be based on "Visual Basic" and "Java" that are in compliant with American National Standard Institute (ANSI) 256.

The communication protocol may be through traditional RS232 or RS485 wire-based methods. Alternatively, any suitable wire-less local area network (LAN) method can be used. From LAN, the data can be communicated to worldwide through traditional data communication lines or through satellites.

Some examples of such as "Baggage Handling Systems" by Flavors Technology Incorporated in Manchester, New Hampshire; and that provided by Siemens in Germany. In all of these cases, instead of bar-code data reader systems and data entry, data will be collected with the 360°, all orientation RFID reader antennae array depicted in this patent application. Inventory software of similar types can be easily adapted for similar applications.

Smart Tag Structures:

As described earlier, different construction of tag depending on antenna design can provide different form factors will different effectiveness of passive read distance. Typical chips used for smart tags are available form Philips with trade-name of "I-Code"; Texas Instrument with trade-name of "Tag-It"; "Pico-tag" from Inside Technology of France; Microchip, Atmel, and Hitachi of Japan all have various form of smart tag chips operating at 13.56 MHz. Other companies such as Intermec is providing chips and tags based on 915 MHz. Single Chip System (SCS) is providing chips an tags based on 2.45GHz. Each frequency of operation will have completely different form and shape of antenna designs. In fact, for the same frequency of operation such as 13.56MHz, different chips could use slightly different design of antenna for optimum performance.

Please see files of US Provisional Application Serial number 60/169,790; 60/175,558; and 60/212,401 and US Patent Application Numbers 09/411,849 and 09/412,058.

In the case of anti-theft or anti-fraud prevention, smart tags may be made to be either tamper-proof with high reliability or "tamper-destruct" whereby any attempt to remove or alter the smart tag will result in destruction and render the tag unreadable. All or some form of these special properties may be used depending on management decision for specific applications.

Please see files of US Provisional Application Serial number 60/169,790; 60/175,558; and 60/212,401 and US Patent Application Numbers 09/411,849 and 09/412,058.

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Positive Claim Check and Secured Item Matching Improvements:

While positive retrieval matching is required by some secure applications, implementation of it typically not easy and cost effective. With the innovative "All-Orientation" RFID reader with multiple antennae that is activated sequentially allows much faster locating the items for retrieval.

In some cases, zones of the storage area storing the items can be built in with such antennae array. If necessary, reader may be connected to locate such items. The antennae array may be arrange similar to the combination of those illustrated in Figure 1 and Figure 2.

It is conceivable that such system can locate the individual items within minutes and thus cutting the delay to minimal.

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Claims for binary tag system:

1. A smart tag tagging and retrieval system comprising of at least the following elements: a smart tag with an embedded chip, a reader that read and store the smart tag information; wherein said smart tag to be placed on items to be transported, stored, and retrieved; tags will be coded with pertinent information of more than 100 bits of memory information; wherein said reader is standalone without needing to be on-line with a computer and can store at more than 10K bit information or information of more than 100 items; wherein at least two tags will be used to identified such items; wherein said information stored within the reader is retrievable into a suitable computer.
2. A smart card electronic tagging and retrieval system of claim 1; wherein said reader includes greeting displays such as LCD, LED, other suitable flat-panel displays, and voice synthesizer greetings.
3. An electronic tagging and retrieval system of claim 1; wherein said radio frequency is operating at 125KHz; 13.56 MHz, 915 MHz, 2.45 GHz; and any suitable frequency in the radio frequency range allowed and allocated for short range read-write applications of less than 10 meters.
4. An electronic tagging and retrieval system of claim 1; wherein said system is used for airline luggage during flight; wherein said two tags are written with suitable matching codes when tagged. **This system may also include the use of the same smart tag technology for staff identification for both security, time-attendance, and productivity of baggage handling.**
5. An electronic tagging and retrieval system of claim 1; wherein said system is used for shipping and receiving during shipment by suitable air, sea or surface transportation;

and wherein said two tags are written with suitable matching codes when tagged, and while one tag stays on the items, the other tags are retained by owner or ship separately to receiving party for retrieval.

6. An electronic tagging and retrieval system of claim 1;

wherein said retrieval system is automatically giving signal such as green or sound of approval for automatic approval when said two tags are within short range in the monitoring gating and reader system;

and wherein when non-matching or only one tag is sensed, a disapproval light and or sound will be made to signal disapproval of retrieval.

7. An electronic tagging and retrieval system of claim 1;

wherein said retrieval system includes use of telecommunication methods in providing information for retrieval within short time of transit of less than 1 hour or more preferably less than 5 minutes where actions involving tagging, retrieval and tracking.

8. An electronic tagging and retrieval system of claim 1;

wherein said system includes monitoring electronic gates; each of said gates contain more than one antenna for each reader;

wherein sampling sequence is designed into the reader so that each of the antenna will be sampling different location of the gate within short span of time where the item is passing through.

9. An electronic tagging and retrieval system of claim 1;

wherein several reader systems are used to form an electronic gate or station of monitoring the movement of tagged items;

wherein each of the reader system may comprise of several antennae locating in different location of the gate so as to expand the size of such gate;

wherein each position of the gate will be monitored by at least one reader with at one of its antenna array; whereby sampling sequence of all reader are tied to each other such that interference will be avoided.

10. An electronic tagging and retrieval system of claim 1;

wherein several reader systems are used to form an electronic gate or station of monitoring the movement of tagged items;

wherein each of the reader system may comprise of several antennae locating in different location of the gate so as to expand the size of such gate;

wherein said antennae arrays are arranged such that the EM field includes perpendicular, parallel, and 45° to the direction of baggage movement covering all orientation of the smart tag antenna orientation;

wherein each position of the gate will be monitored by at least one reader with at one of its antenna array; whereby sampling sequence of all reader are tied to each other such that interference will be avoided.

11. An electronic tagging and retrieval system of claim 1;

wherein said smart tags are made to be tamper-resistant such that normal environmental condition encounter during transit will not decrease its sensitivity;

and wherein said conditions includes exposure to temperature of –40 to +60C;

with moisture of close to 100% under higher temperature condition.

12. An electronic tagging and retrieval system of claim 1;

wherein said smart tags are made to be tamper-destruct such that any attempt to tamper the tagged items can be easily detected.

13. An electronic tagging and retrieval system of claim 1; wherein said binary tags are used in medical application; wherein one tag is used on baby while the other tag is to be worn by the mother or care provider, alarm or signal will be given when single or non-matching tags passes through the electronic gate.

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14. An electronic tagging and retrieval system;

whereby at least one tag for the same item are used;

whereby at least one tag stays with the item during the transportation or shipping;

whereby said electronic tags are smart tags with integrated circuit linked to an antenna;

wherein said antennae arrays are arranged such that the EM field includes perpendicular, parallel, and 45° to the direction of baggage movement covering all orientation of the smart tag antenna orientation;

wherein said tagged item and said retrieval tag pass through at least two electronic monitoring gates to afford movement tracking of such tagged item;

said electronic gate uses at least one reader with at least two antennae to form an array;

wherein said reader energize said antennae array in a sequential manner to avoid interference and yet providing expanded size of said gate for larger tagged items.

15. An electronic tagging and retrieval system of claim 14;

wherein said radio frequency is operating at 125KHz; 13.56 MHz, 915 MHz, 2.45 GHz;

and any suitable frequency in the radio frequency range allowed and allocated for short range read-write applications of less than 10 meters.

16. An electronic tagging and retrieval system of claim 14; wherein said system is used for airline luggage during flight; wherein said two tags are written with suitable matching codes when tagged. **This system may also include the use of the same smart tag technology for staff identification for both security, time-attendance, and productivity of baggage handling.**

17. An electronic tagging and retrieval system of claim 14;

wherein said system is used for shipping and receiving during shipment by suitable air, sea or surface transportation;

and wherein said two tags are written with suitable matching codes when tagged, and while one tag stays on the items, the other tags are retained by owner or ship separately to receiving party for retrieval.

18. An electronic tagging and retrieval system of claim 14;

wherein said retrieval system is automatically giving signal such as green or sound of approval for automatic approval when said two tags are within short range in the monitoring gating and reader system;

and wherein when non-matching or only one tag is sensed, a disapproval light and or sound will be made to signal disapproval of retrieval.

19. An electronic tagging and retrieval system of claim 14;

wherein said retrieval system includes use of telecommunication methods in providing information for retrieval within short time of transit of less than 1 hour or more preferably less than 5 minutes where actions involving tagging, retrieval and tracking.

20. An electronic tagging and retrieval system of claim 14;

wherein said system includes monitoring electronic gates; each of said gates contain more than one antenna for each reader;

wherein sampling sequence is designed into the reader so that each of the antenna will be sampling different location of the gate within short span of time where the item is passing through.

21. An electronic tagging and retrieval system of claim 14;

wherein several reader systems are used to form an electronic gate or station of monitoring the movement of tagged items;

wherein each of the reader system may comprise of several antennae locating in different location of the gate so as to expand the size of such gate;

wherein each position of the gate will be monitored by at least one reader with at one of its antenna array; whereby sampling sequence of all reader are tied to each other such that interference will be avoided.

22. An electronic tagging and retrieval system of claim 14;

wherein said smart tags are made to be tamper-destruct such that any attempt to tamper the tagged items can be easily detected.

23. An electronic tagging and retrieval system of claim 14;

wherein said smart tags are made to be tamper-resistant such that normal environmental conditions encounter during transit will not decrease its sensitivity;

and wherein said conditions includes exposure to temperature of –40 to +60C;

with moisture of close to 100% under higher temperature condition.

24. An electronic tagging and retrieval system of claim 14;

wherein said electronic reader is mobile without direct connection to central computer and data base;

wherein said reader contains sufficient memory to store such tagging information; said electronic reader can down load to central computer via wireless or wired means.

25. An electronic tagging and retrieval system of claim 11;

wherein said antennae array for reading all orientation of said smart tag is also used or built into the storage area inside the storage areas and/or inside the baggage storage areas of the airplane.

26. An electronic tagging and retrieval system of claim 1;

wherein said antennae array for reading all orientation of said smart tag is also used or built into the storage area inside the storage areas and/or inside the baggage storage areas of the airplane.

27. An electronic tagging and retrieval system of claim 14; wherein said binary tags are used in medical application; wherein one tag is used on baby while the other tag is to be worn by the mother or care provider, alarm or signal will be given when single or non-matching tags passes through the electronic gate.

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1. Current Contact Card Access Control:

- Revise and ensure the functioning of "office" lock control with network, ON-LINE monitoring software.
- This ON-LINE monitoring should be able to monitor ANY number of locks in REAL-TIME manner.
- Any access being made will pop-up on the screen. Partition of screen for multiple accesses should be clearly indicated.
- Optional screen partition and ROLLING screen CLEARLY identifying LOCK AND WHO when accesses are being made simultaneously.

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2. Interfacing Mifare card into Current Access Control System

- Revise and ensure the functioning of "office" lock control with network, ON-LINE monitoring software.
- This ON-LINE monitoring should be able to monitor ANY number of locks in REAL-TIME manner.
- Any access being made will pop-up on the screen. Partition of screen for multiple accesses should be clearly indicated.
- Optional screen partition and ROLLING screen CLEARLY identifying LOCK AND WHO when accesses are being made simultaneously.

- Complete the current integration of the READER-ACCESS CONTROL system.
- Detailed written documentation.
- Make the software system to INCLUDE all format of cards including: Mifare, Siemens-Infineon 4428/4442 and others; keypads; and combination of keypads and Mifare, keypads and 4428/4442; Keypad alone, etc.

3. I-CODE Reader Development

- Understanding 13.56 MHz international interface standards.
- Development reader that is cost effective.
- Develop HIGHER POWER-LONGER READ DISTANCE reader. May increase the power level to as much as 30 or more watts.
- Develop Reader with LARGER LOOP ANTENNA. The geometric loop should be as large as possible. Optimum, if possible, is 40 linear feet antenna, i.e. 10x10 square feet size.

➢ **Develop the switching interface soft-firm-hardware necessary to access as many antenna in array format. That is, it should be able to sequentially addressing each antenna individually with shortest time necessary to read the tag before switching to the next antenna.**

➢ Make sure each antenna reading will not interfere with each other.

➢ Make sure the software will be able to discard or equate the same tags being read within specified time that is adjustable.

➢ Make sure that the mechanical interface to each antenna should be easy to contact. Define the length of the cord that can be used for each antenna. Make sure that it is easy. Is co-axial cabling necessary at all.

- ♦ See if we can use I-CODE as access control card.
- ♦ If yes, use 4428 card and contact reader for data transfer for any changes that we want to make on individual locks that is not online with computer control.
- ♦ Same idea of using 4428/reader as means for data transfer for all forms of access control.

4. TRADE-SHOW Management with Mifare Card

- Use the basic "TIME-MESSENGER" hardware or a "pancake computer (?)" as basic storage unit and interface units.
- Must have sufficient non-volatile memory for independent operation for storing up to at least 10,000 leads.
- If possible, develop redundant memory to include: chip with non-volatile like that of the time-clock system (increase the memory if possible: store only main information); include floppy drive for down-loading.

- Make sure it can print each lead in-line immediately upon reading. Thermal printer will be adequate.
- Make sure it can address the card-holder with graphic display incorporated with the system.
- Make sure it can interface with external LED reader.
- Make sure it can interface with an optional voice-synthesizer and speaker.
- Make sure of the interactive capability with keypads or optional smallest keyboard.
- Make a simple Q&A interface for easy entry of customized questions.
- Make sure the answers are coded for storage.

➢ **Develop the use with I-CODE if at all possible.**

➢ Make logistical usage of the writeable memory.

- See if we can WRITE-BACK the website address of the reader-holder (vendor, exhibitor) for ease of getting additional information by the customer-visitor. That is, when the visitor swipe his card on the reader, besides the reader getting the information on the visitor, the reader also download the website address onto the card.
- Develop a LOW-COST interface device for the card-holder or generally anyone having the same tags of MIFARE or/and I-CODE can use such device to directly plug into serial/parallel ports of computer and automatically link to the website that is loaded in the card.

Confidential

5. Shipping/Receiving/Manufacturing/Inventory Control Software Using I-CODE

- Use Windows NT Based ACCESS data base.
- Investigate how easy is it to download and upload such information with other data base such as ORACLE, SYBASE, INFORMIX.
- Each record should include information similar to time clock usage: time of entry or exit, what and how many is being recorded, if some compatible card is used by employee: who is doing the transporting.
- For manufacturing, there may be two-gate to form a work area. Each of work station may incorporate certain operation using some items of the bill of material. The actual usage may be different from the projected/theoretical usage. Interactive keypad or keyboard must be provided for data entry of such information. Such entry may be expanded to include the "quality" data to be entered by the operator concerning the particular operations being performed for the particular item being worked on.
- Similar to "TIME-MESSENGER", it can be operated ON-LINE and OFF-LINE. Thus the reader must also have substantial data storage capability. The same method used for "TRADE-SHOW" may be applicable.
- If possible, develop redundant memory to include: chip with non-volatile like that of the time-clock system (increase the memory if possible: store only main information); include floppy drive for down-loading.
- Make sure it can print each lead in-line immediately upon reading. Thermal printer will be adequate.
- Make sure certain alarm using speaker and flashing light, etc. may be used to give specific notice for management, etc.
- Make sure of the interactive capability with keypads or optional smallest keyboard.
- Make sure easy interfacing with standard MRPII software.

➢ **Develop the use with MIFARE instead of I-CODE.**

➢ Make logistical usage of the writeable memory.

➢ The tag may stay with the items after finishing the manufacturing for audit-trail purposes.

- Alternatively, after all the information is collected using I-CODE as tracking devices. A simple software will collect all relevant information and using different Mifare reader/writer to encode these information on the tag and attach the final products as audit trail.

Combination and Compatible Usage of Contact-Type, Contact-less Type, Magnetic Stripe, and Personal Identification Number Technologies for Access Control, E-Purse, Credit Card, Debit Card, Identification, and Other Information Retrieval Applications

(Rev. C November 3, 2000)

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TRODUCTION

Access control, credit card, debit card and other identification applications using personal identification number (PIN) on keypads, magnetic stripe, bar-code, contact-type and contact-less type smart cards have been used for quite extended period.

Because of the relative easiness in duplicating of magnetic stripe and bar-code, PIN has been used in combination with some of these applications.

Because of the relative abundance of magnetic stripe credit card, contact-type smart card for use as credit and debit card have been extended to have dual functionality by taping magnetic stripe in the same format as otherwise without the smart card chips. With such usage, typically, dual systems are set up independent for each system to access the data base for specific applications.

In the case of smart cards, there are substantial interest in dual functionality within a single card and single chip to be useful for both contact-type and contact-less type applications. In fact, Infineon (previously Siemens) in Germany, and Philips in Netherland have some prototype products in this area. But price and availability is quite high. In fact, if one were to use two different chip such as contact type secured memory chips (e.g. SLE4442, SLE4428) from and contact-less type from Siemens-Infineon (e.g. Mifare or I-code.) from Philips or similar products from Siemens-Infineon, the combined cost of individual chips are substantially lower than when both function is integrated into a single chip. The difficulty and price difference is believed to be resulted in putting two different chips and functions within the same cards.

If a low cost method can be developed to embedded contact module with its chip and contact-less antenna with its chip within the same card, the cost should be lower for almost all cases. One reason being that of intrinsic higher cost of manufacturing in integrating both contact

d contact-less function within same chips in the semi-conductor levels. This is particularly true for lower volume applications.

Another problem is that of system compatibility. There are substantial systems already existed for the contact type card including credit and debit card usage, access control usage, and other ID applications. Both the hardware and software is difficult to be compatible when one want to integrate such combo-card with a single chip. The compatibility and upward and downward upgradability is not possible or costly. In fact, this aspect of existing infrastrusture in magnetic stripe cards used in credit and debit card applications have slow the adoption of smart card in USA. It is difficult to justify abandoning locks and systems for even for small access control systems with magnetic strip and PIN combination in lieu of the more advanced systems with smart cards. The compatibility and upgradability with the advancement of these different card technologies are very important for the adoption and migration of newer card technologies.

In this patent application, we adopt a universal card approach to facilitate ease of migration from one card technology such as magnetic stripe to any other type of card technologies for various applications.

In some of the previous patent applications: 09/412,058; 09/411,849; 09/412,052; and US provisional patent applications: 60/169,790; 60/184,410; we have discussed the usage of method to embed contact type chips and contact-less chip within a card. It was also possible to use the same techniques to embedded two different chips within the same cards without much additional cost. The total cost of manufacturing will not be significantly different than the combined cost of the chips and the making of the card for one of the system. For example, if the contact-less chip(US$0.25) and embedded into module (US$0.25) cost US$0.50 and the contact-type chip (US$0.25) with its antenna (US$0.25) cost US$0.50, the making of contact-less card is

US$0.25, the total cost for making such combination card with two separate chip will be US$1.25 or slightly higher.

In the case of dual functionality within a single chip such as SLE66CL160S from Siemens-Infineon, the cost of the chip itself can be as much as US$2.00. Adding the cost the making contact module and antenna (US$0.50), the making of card being the same (US$0.25), the total cost increase to almost US2.75 each.

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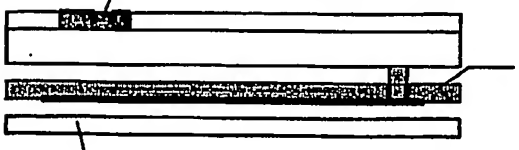
Simple Interfacing Different Technologies within the Same Card:

There are many levels of system integration for this "universal card". One simple method is to allow different system of software and hardware belonging to different technology to co-exist. For example, the existing locks and access control software using magnetic stripe technology can continued to be used. The only modification is to use the magnetic stripe card that also has the contact smart card, or contact-less smart card, or its combination card. Separate systems utilizing one or more the other technologies can then also be used within the same common facilities. There is very little common characteristics among the combined systems. The only advantage is that the old system does not have to be abandoned to allow new system to be introduced. This is achieved without having to carry several cards. In fact, magnetic stripe can be added onto contact smart card and contact-less smart card readily and are used in some system. The innovation involved combined magnetic stripe, contact chip, and separate contact-less chip in the same card to allow easier upgrading and compatibility.

The key controlling factor will be to make the card with all three function within the same card at cost effective manner. The contact-less card inlays are made separately in manners described in the previous patent disclosure mentioned above. The contact modules are made with again flip-chip method described in earlier patent applications. Because of the relatively thin contact-less inlay of 75-100 micron thickness over the thickness of the die, there is no difficulty in combining all three technologies within the same card.



Contact Module embedded within the thicker side of cover layer. The cavity may for the module can be created with various suitable means commonly used in the industry. Chip-coupler approaches described in the previous patents are preferred in this patent application

Contact-less inlay with flip-chip chip-coupler™ substrate

The bottom cover sheet laminated over the contact-less inlay with flip-chip chip-coupler™ substrate. Total thickness is easily controlled within 30-33 mils requirement. In fact, the chips can now be lapped to well within 1-2 mil, the total thickness can be controlled to as thin as 5-30 mils easily. Thinner card can potentially used for some special applications.

Figure 1: "Universal" card to include at least two different chips using different protocols including contact and contact-less or dual mode chips. It may also include magnetic stripes. Special manufacturing technology must be used to accommodate multiple chips in single card.

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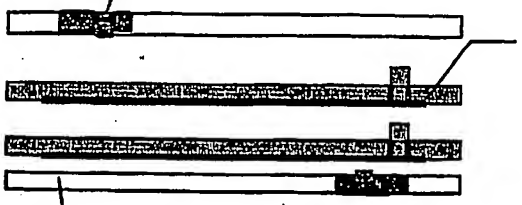
Docket #4957.2005

Contact Module embedded within the thicker side of cover layer. The cavity may for the module can be created with various suitable means commonly used in the industry. Chip-coupler approaches described in the previous patents are preferred in this patent application

- ***Up to two chip-module may be used for each side of the card***



Contact-less inlay with flip-chip chip-coupler™ substrate

- ***Chip may be used on several layers***
- ***Same antenna may be used for multiple chips taped at same or different portion of the antenna.***
- ***Chips and antennae of different frequency can also be used if proper precaution is made for shielding effect against each other.***

The bottom cover sheet laminated over the contact-less inlay with flip-chip chip-coupler™ substrate. Total thickness is easily controlled within 30-33 mils requirement. In fact, the chips can now be lapped to well within 1-2 mil, the total thickness can be controlled to as thin as 5-30 mils easily. Thinner card can potentially used for some special applications.

- ***Chip may be used on both sides of the card. Up to two chip-module may be used for each side of the card***

Figure 1A: "Universal" card to include at least two different chips using different protocols including contact and contact-less or dual mode chips. It may also include magnetic stripes. Special manufacturing technology must be used to accommodate multiple chips in single card.

- Up to four contact chips and two or more contact-less chips may be used.
- For chips operating at same frequency, same antenna may be used and contacts made at different take-off points for the optimum reading of the specific chips. For example, I-Code typically used one less loop than that of the Mifare chip. Both I-Code and Mifare are made by Philips and operating at 13.56MHz.
- Contactless chips operating at different frequencies can also be used as long as shielding effects from the antenna are minimized.

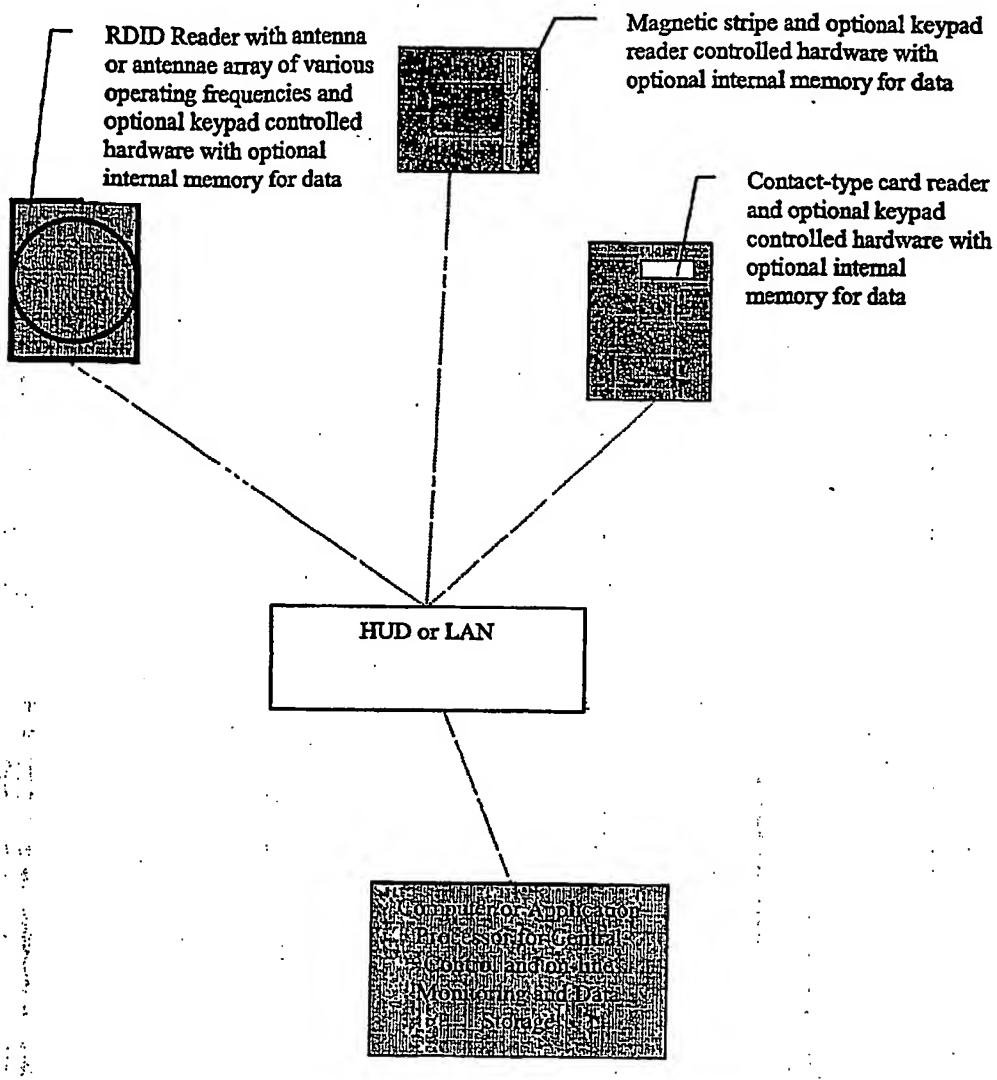


Figure 2: Universal card that can be upward and downward integrated with any standard technologies. This particularly useful for those systems and applications that have substantial infrastructure investment.

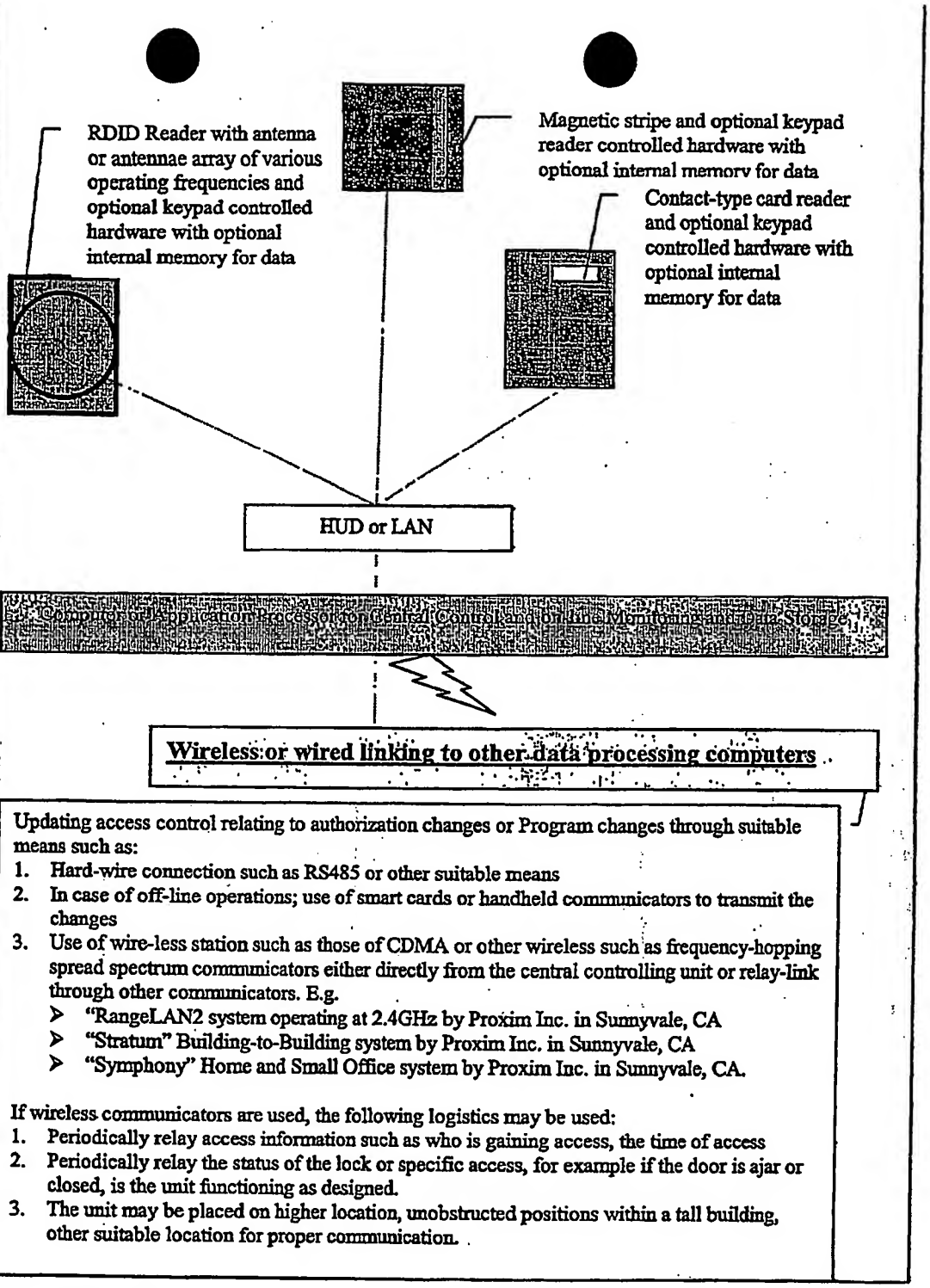


Figure 3A: **Universal card that can be upward and downward integrated with any standard technologies. This particularly useful for those systems and applications that have substantial infrastructure investment. Wireless and wired connection may be made to form wide-area-network.**

➢ ***Contact chip and corresponding decoding units may be used as media and mean of transferring data and programs for systems not directly tied to a computer.***

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RFID and Contactless chip-antenna assembly within the same card of tag:

In case of using RF chips, the frequency range will determine the number of loops necessary to produce a resonant effect and ability to interact with RF reader. In the case of 125KHz, for a card size of approximately 2inch by 3 inch, it may need as many as 120-150 turns. In the case of 13.56MHz, it usually needs 6-9 turns. In the case of systems operating at 915MHZ and 2.45GHz, they may only require 1-2 turns and in much smaller area. If the antenna of different chips are simply overlapping each other, they may create a shielding effect and thus dramatically interfering with its interaction with the RF reader or base-station.

To make sure that the antennae of chips that function in the same frequency such as 13.56MHz, the chips may be attached to the same antenna but taped at different point of the antenna for individual chip-antenna optimization.

For chips that may be operating at 915MHz, 2.45GHz, etc., the antenna-chip assembly can be simply placed adjacent to each other without overlapping with each other.

For mixed systems of different frequencies, the antennae-chip assemblies should be adjacent to each other rather than overlapping each other.

Single Operating System Interfacing Different Technologies within the Same Card:

There are many levels of system integration for this "universal card". One simple method is to allow different system of software and hardware belonging to different technology to co-exist. For example, the existing locks and access control software using magnetic stripe technology can continued to be used. The only modification is to use the magnetic stripe card that also has the contact smart card, or contact-less smart card, or its combination card. Separate systems utilizing one or more the other technologies can then also be used within the same common facilities. The innovation involved combined magnetic stripe, contact chip, and separate contact-less chip in the same card to allow easier upgrading and compatibility.

Alternatively, a single or multiple system of software and hardware can be integrated to any desired degree to allow common use of data base more easily. For example, in the case of lock, same lock using magnetic stripe can be added a keypad interface. The hardware in this case will have both keypad and magnetic stripe, or for that matter, it can have also contact-type smart card within the same system. The access control may use any one of the mechanism or some combination of all three to achieve access control.

In this particular case, the software, firmware if any, and hardware must be fully integrated. Access can be given by simple input of proper PIN code or a combination of magnetic stripe and PIN, or usage of contact-type card along with PIN code, or any of the combination above. The capability is important for the convenience in case of loss or absence of card. The software controlling the access does not has to change, it simple recognized all of the input of codes by magnetic stripe or contact-type smart card with PIN, PIN or longer specialty PIN when only PIN is used. Different degree of security may be achieved for different accesses of varying

portance. All of the combination can be used for battery operated access control because of ease in sensing the codes input until one of the methods is used in attempting the access.

In case of using contact-less card, because of the high level of energy must be used to effect the interaction between the chip card and the base station, they are more useful for those environments that wired or adequate energy source is available. The combination of the various technologies for access control is still highly useful. The same keycard with contact-less inlay within the card eliminates the need for multiple keycard where different locks using different technology co-existed.

The need of utilizing different technologies may be due in part because of existing infrastructure. Different technologies are needed because of specific operating environment. For example, in a campus, dormitory rooms are easier to operate using hardware that can use battery or at least a combination of battery and AC power. In the case of stadium or other operation, when large number of people is expected, contact-less card technology is much faster and more useful. In case of more secure application, a combination of technologies may offer advantages.

Claims:

1. A keycard access control system; where at least three of the technologies including magnetic stripe, contact smart card, contact-less smart card, PIN are used either independently or in combination to varying degree; wherein all of the magnetic stripe, contact module, and contact-less inlay are built into the same card.
2. A keycard access control system of claim 1; wherein said contact module and said contact-less inlay utilize different chips.
3. A keycard access control system of claim 1; wherein said system utilize different systems of hardware and software for magnetic stripe, contact-type card, and contact-less card.
4. A keycard access control system of claim 1; wherein said system utilize same software system with different hardware for magnetic stripe, contact-type card, and contact-less card.
5. A keycard access control system of claim 1; wherein said card is used for point-of-sales, or e-purse, or medical and personal information details.
6. A keycard access control system of claim 1; wherein at least one more contact modules are embedded in the same card on each sides of the card in accordance to standard ISO or other positions for other specific information carrying purposes.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	:	10/086,183	Confirmation No.: 8214
Applicant	:	Christer O. Andreasson	
Filing Date	:	02/26/2002	
Title	:	SYSTEMS AND METHODS FOR TRACKING PHARMACEUTICALS WITHIN A FACILITY	
Group Art Unit	:	2636	
Examiner	:	Julie Bichngoc Lieu	
Docket No.	:	706737.38 (formerly 263/292)	
Customer No.	:	34313	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF CHRISTER O. ANDREASSON AND JIMMY C. CAPUTO UNDER 37 C.F.R. §1.131

Sir:

The undersigned inventors, Christer O. Andreasson and Jimmy C. Caputo make this declaration attesting to the conception of the present invention prior to the effective filing date of January 11, 2002 of the cited Martucci et al. published application No. 2004/0104271, and likewise prior to the filing date of January 29, 2002 of the cited Bui et al published application No. 2003/0141981.

1. The basic concept of the invention was conceived in 2001 as evidenced by the block diagram of Exhibit 1, which was briefly described at a subsequent Board

CERTIFICATE OF MAILING
37 CFR §1.8

I hereby certify, pursuant to 37 CFR §1.8, that I have reasonable basis to expect that that this paper or fee (along with any referred to as being attached or enclosed) would be mailed or transmitted on or before the date indicated with the United States Postal Service with sufficient postage as first class mail on the date shown below in an envelope addressed to the Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Dated: June 29, 2005

Jodie Davis

DOCSOC1:164327.1

Meeting of the Assignee Safety Syringes, Inc. as indicated by Exhibit 2, sketched on a napkin of Exhibit 3 , and described in an invention disclosure of Exhibits 4a-c, and other documents described below, all in 2001.

2. A purchase order in the amount of $4,767.30 was issued to Automation Controls to build a RFID demonstration case with labels as evidenced by Exhibits 5a and b, all in 2001.

3. Proposed terms of an agreement with Escort Memory Systems (EMS) was developed as evidenced by Exhibit 6 (two pages), and their proposal and Purchase Order of Exhibits 7a and b, all in 2001.

4. Further initial specifications for the RFID Med Error System were developed as evidenced by Exhibit 8 (two pages), a document of Exhibit 9 (two pages) defining the relationship with EMS, and which was illustrated and described in a Board of Directors meeting as evidenced by Exhibits 10a and b (ten pages) and shown in diagrams of Exhibits 11a-c, and a demonstration software proposal by subcontractor NEXTWERK, as shown in Exhibit 12 (ten pages), all in 2001.

5. Successful tests of a plate reader in making substantially simultaneous readings of plural tags, made by EMS in 2001 are shown on Exhibits 13a and b, and proof of concept of Smart Drawer is shown in Exhibits 14a-c, all in 2001.

6. Requirements for a demonstration system were developed in early 2002, before January 11, 2002, as shown in Exhibits 15a-e.

7. All of the foregoing occurred before the effective filing date of January 11, 2002 of the Martucci patent. Subsequent thereto, continued diligent efforts were made

in working with the supplier EMS as evidenced by a meeting agenda of January 17, 2002 between the Assignee of the present application and EMS of Exhibit 16, Drawer System drawings dated January 16, 2002 of Exhibits 17a-f, and overall system diagram dated January 17, 2002 of Exhibit 18.

8. Work with a supplier EMS continued as evidenced by their price quotation revised January 23, 2002 and Purchase Order dated January 29, 2002 of Exhibits 19a and b, Med Error System (Demo) of Exhibits 20a-c, cabinet and drawer drawing of January 31, 2002, drawing of February 11, 2002 and dispensing station rendering dated February 15, 2002, as evidenced by Exhibit 21a-c.

9. The RFID Med Error System was further described and discussed at a February 19, 2002 Board of Directors Meeting as indicated in Exhibit 22 (six pages), and meeting Minutes of February 25, 2002 and further descriptions of system and progress as evidenced by Exhibit 23 (22 pages), and

10. E-mails and photographs dating from January 12, 2002 to February 28, 2002 of Exhibit 24 (19 pages), further show diligence in developing the system and method of the present application.

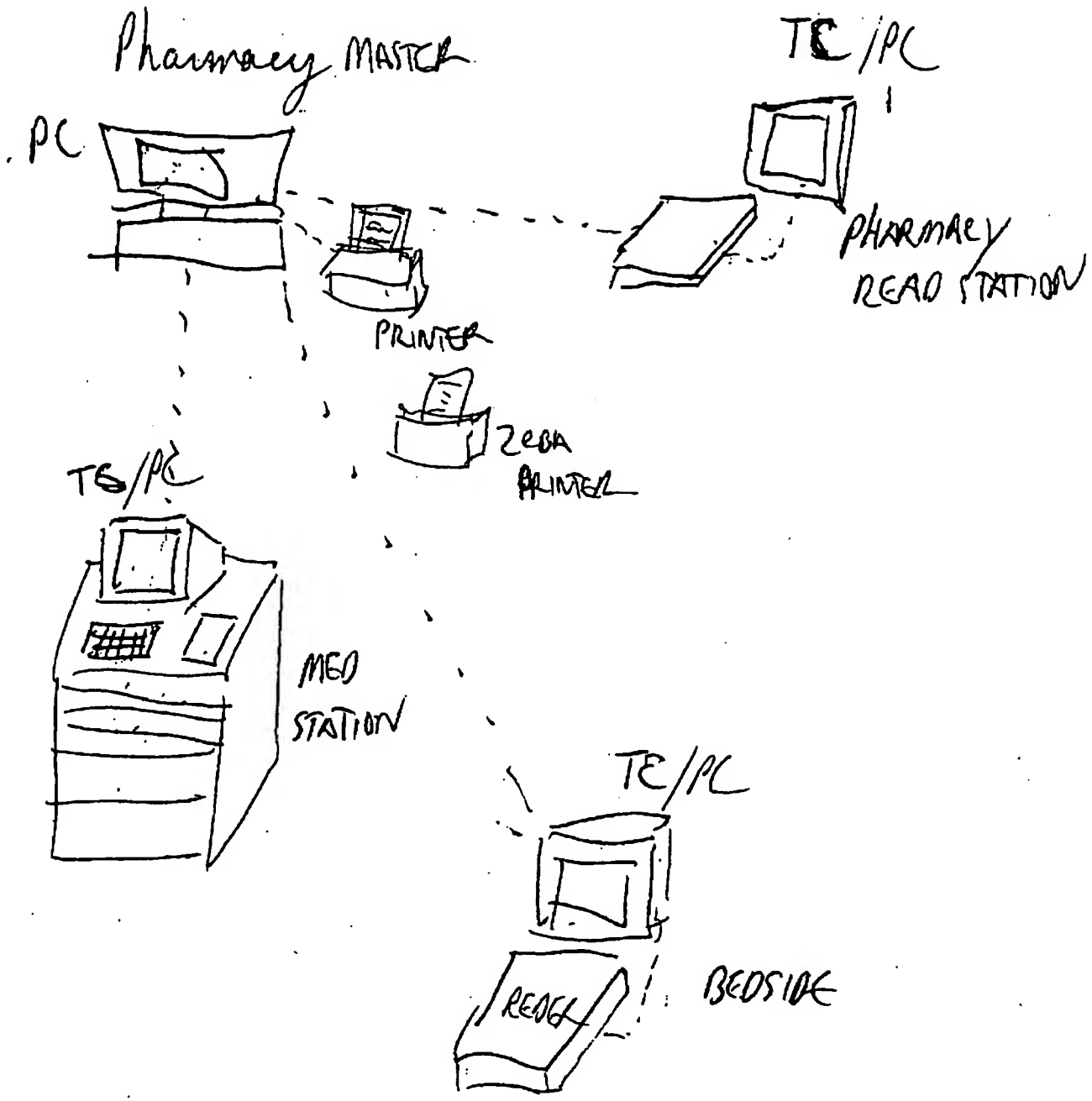
11. The present application was filed February 26, 2002.

We further declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Title 18,

United States Code, § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: 6/28/05 By: _____
Christer O. Andreasson

Dated: 6/28/05 By: _____
Jimmy C. Caputo



1. WIRELESS CONNECTION BTWN STATIONS
   CATS OPTIONAL BACKUP

2.

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SafetySyringes, Inc.

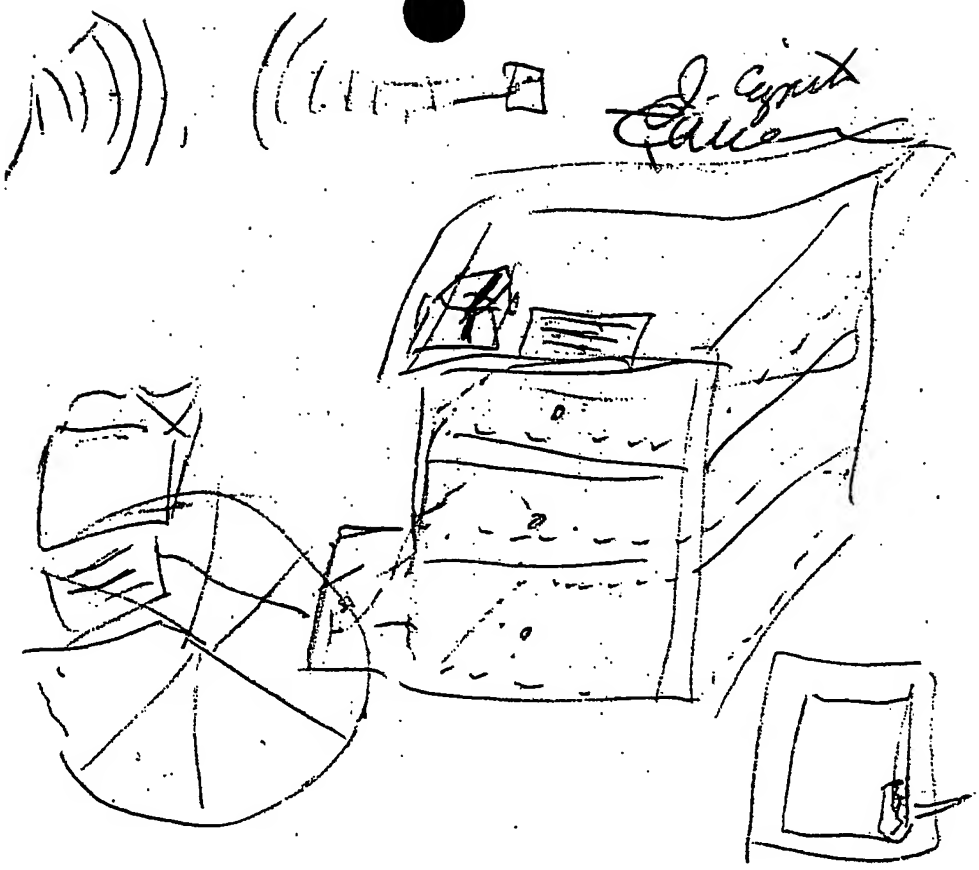
Technology Group

- **Product Coding Project**
  - Presented RFID Technology to VISI (Vaccine Identification Standards Initiative) Meeting
    - Awaiting formal word but informally notified we will be invited to present at the "top three" technology selection meeting
  - Have Identified two sources for RFID labels
    - Both will entertain exclusivity for medical applications
    - Both offer "turnkey" solutions for RFID implementation (labels, readers, software)

Technology currently being used successfully in:

- Postal applications
  - DHL
  - Italian Postal Service
- Manufacturing process control/data recording
  - Engine manufacturing
  - Meat industry
  - Disk hard drives

Confidential



FRIDAY @ 10.00
Eugene Work

Christer Andreasson

To: waenglish@lyonlyon.com
cc: jcap519@worldnet.att.net

Subject: CA/JC Invention/Automated Medication Error Prevention System for Replenishment/Dispensing/Administration

Bill,
Here is my first stab at describing the invention we discussed last week. Please see the drawing we provided. This drawing only covers part of the invention.

Background: Medication errors are a major concern within the US health care system and initiatives are put in place to address these issues (note IOM reports). As a result a large number of patients are given the wrong drug, potentially resulting in death. Today, the dispensing and administration of medications within hospitals, require manual verification of drugs dispensed by Pharmacy and nursing staff. Systems addressing these issues are offered by Pyxis, McKesson, OmniCell and Diebold. Dispensing systems are typically located on nursing floors, Emergency care units and Intensive care units. These are connected to the hospital/pharmacy database and able to verify the correctness of patient prescriptions. Bar-code readers are sometimes located on the nursing floors and used to verify, at bedside, that the correct drug is going to be administered to the intended patient. Using these could be time consuming for the nursing staff since they require individual scanning. There are very few installations and hence uses of these readers in the US and abroad. As the use of "point of care" will increase these systems will need to be automated and hence become safer, more accurate, less depending on manual verification ("honor system") and much less time consuming to use.
The invention: A complete, hospital wide system, which automatically records the inventory, dispensing, replenishment and administration of drugs, within the health care setting and which is integrated to the data processing system presently in place in the individual institutions. The system may initialize verification of content as these different devices are accessed and/or may be updated from time to time as required. At the point of care (for example at patient bedside) a device is being used which would automatically and instantly verify that multiple drugs, which have been dispensed with the intent to be given to a specific patient, is prescribed for the intended patient and that no mix-ups have taken place from the time of dispensing.

Hope this is sufficient for you to start writing the patent application.

Best regards,
Christer

PS. Jim, please edit as you feel is required.

"TAG-IT" — TRADEMARK ?

Preliminary Requirements Engineering Document

Author: Prasad Mahendra <*pmahendra@all-tral.com*>

The demonstration will be a distributed computing system, with user stations running distributed applications with a central database/application server.

Demo Stations

- Three Types of stations (or user level access) have been identified for this demonstration
  1) Doctor
  2) Nurse (user level access only or may be given a separate station to mimic a 'nurse station' at a hospital)
  3) Pharmacist
  4) Patient Bedside
  5) Floor Cart

- The each station in the demonstration will be a separate and distributed stand alone x86 machine running Solaris OS connected via a switched wireless local area network (*).
- All users are subject to authorization through a smart card/reader (or biometrics) before allowed access to a station (*)

Doctor:

- Doctor may prescribe a medication to a patient which is electronically routed to the pharmacist computer system or directly to a floor medical cart (*)
- A doctor may specifically authorize a nurse (or someone else) through their unique id to pick up and deliver medication.
- Prescription process will automatically check for any allergies to the medication and warn the doctor. The warning will be a visual user friendly cue.

Nurse

- A nurse may pick up medication from a floor medical cart. The floor cart will keep track of information such as who took which item, the time, etc
- A nurse may administer a drug to a patient subject to Patient bedside station protocols.
- A nurse may pick up and deliver a medication directly from the pharmacy

Pharmacist

- Has an RFID scanner, a monitor/screen, authorization device - smart card reader or biometrics scanner, keyboard, mouse or touch sensitive screens (*)
- May restock pharmacy (receive items)
- May restock floor cart

- May issue medications to nurse or a patient directly if allowed
- Prescription process will automatically check for any allergies to the medication and warn the pharmacist. The warning will be a visual user friendly cue (*).
- May print reports (MARs, inventory etc)

Bedside Station

- Has an RFID scanner, a monitor/screen, authorization device - smart card reader or biometrics scanner, mouse or a touch sensitive screen (*)
- A bedside RFID scanner will scan a medication and authorize its administration
- A bedside monitor will visually identify the patient and visually cue authorization of the administration of the medication.
- The bedside system may be manually overridden by an authorized nurse/doctor eg: Head nurse or a senior surgeon (*).
- The bedside scanner will append/update appropriate reports to indication the administration of a medication.

Floor Med-cart

- Has an RFID scanner, a monitor/screen, authorization device - smart card reader or biometrics scanner, keyboard, mouse or touch sensitive screens (*)
- Contains a continually scanning (RFID) system to keep track of all medications inside.
- Opens drawers per authorized user per prescription or per selected medication
- Keeps track of drugs and user access and generates reports whenever a user has removed an item.
- Electronically controlled drawer locking mechanisms (*)
- "Return Drawer" — creates an updated "Returned Inventory"

(*) – Implementation details subject to change given the system development constraints (time, cost, robustness/reliability etc).

SafetySyringes, Inc.

auto 0002

PURCHASE REQUISTION

COPY

PURCHASE ORDER # (if required): 100453 M
(yes)

REQUEST DATE: EXPECTED DELIVERY DATE:

REQUESTED BY: JIM CAPUTO

VENDOR NAME:	AUTOMATION CONTROLS	SHIP TO (if applicable):	WILL CALL
ADDRESS:	743 CAMDEN AVE.		SST
CITY, STATE & ZIP:	CAMPBELL, CA 95008		1925 ~~PALOMAR OAKS WAY~~
PHONE:	(800) 922-6646		STE 204
FAX:	(408) 370-1356		~~CARLSBAD, CA~~

QUANTITY	DESCRIPTION (See QUOTE)	UNIT PRICE	EXTENDED PRICE	CHARGE TO ACCOUNT ~~####-##-####~~
1	CO-1131 LRP W. PLATE DEMO KIT	$3995	$3995	6325-00-1001
1	LRP-04 CONV.	$695	$695	6325-00-1001
1 LOT	SAMPLE LABELS	$77.30	$77.30	6325-00-1001
	TOTAL		$4767.30	

Is this purchase taxable? YES ☒ NO ☐
(All non-inventory items are taxable. Please advise the vendor to charge tax on the invoice.)

Are freight charges included in the prices above? YES ☐ NO ☒

PURCHASE APPROVED(signature): [signature]

DATE: _____

PURCHASE RECEIVED COMPLETE (signature): _____

DATE: _____

AUTOMATION CONTROLS

CORPORATE HEADQUARTERS
743 Camden Avenue, Campbell, CA 95008
Phone: (800) 922-6646 Fax: (408) 370-1356

6325-00-1001
Coding

Safety Syringes, Inc.
Jim Caputo
1925 Palomar Oaks Way Suite 204
Carlsbad CA 92008
jcap519@worldnet.att.net
(760) 435-2171 (FAX)
Dear Jim:

Proposal #
RJ0107260849

Proposal Name
RFID Demo Case with labels

Thank you for the opportunity to provide this proposal for the following control equipment.

Item #	Part Number	Description	Delivery	Qty.	Unit Price	Extended
1	00-1131	LRP Wide Plate Suite Case Demo		1	$ 3,995.00	$ 3,995.00
2	LRP-04	LRP Conveyor Antanna only		1	$ 695.00	$ 695.00
3	LRP-L2666	Peel "n" Stick Label Tag 26 x 66mm		10	$ 0.97	$ 9.70
4	LRP-L5555	Peel "n" Stick Label Tag 55 x 55mm		10	$ 1.09	$ 10.90
5	LRP-L4982	Peel "n" Stick Label Tag 49 x 82mm		10	$ 1.22	$ 12.20
6	LRP-125HT-FLX-01	High Temp Flex Tag		10	$ 4.45	$ 44.50
7	LRP-L1331-TD	Converted Label with printing on wax paper backing on a 4" roll		2000	$ 2.04	$ 4,080.00
8	LRP7400	I-Code Handheld		1	$ 1,529.00	$ 1,529.00
9	LRP Software	Application Software		1	$ 325.00	$ 325.00
10	F970USA	In Stock Charger with cables to PC Interface		1	$ 225.00	$ 225.00
11	F970/C USA	In Stock Charger only		1	$ 180.00	$ 180.00
					Total:	$11,106.30

F.O.B.: Automation Controls Facility for all UPS surface shipments. All orders shipped directly from the manufacturer or via a shipping method other than UPS surface will be F.O.B. manufacturer location.

Delivery: See above for individual delivery dates.

Terms: Net 30 days upon prior approval by the Automation Controls Credit Department.

Pricing: Prices are provided firm for your acceptance within a 30-day period from the date of this proposal. All prices are quoted based on costs as of the date of this proposal and are subject to change based on actual costs at the time of shipment.

Thank you again for the opportunity to provide our equipment and support. We look forward to receiving your purchase order so we can deliver these controls in accordance with your manufacturing time frame.

Sincerely,

Rich Jackson
Automation Controls

SafetySyringes, Inc.™

Re: Proposed Terms of Agreement

This letter of intent proposes an agreement between Safety Syringes, Inc. ("Safety Syringes") and Escort Memory Systems. ("Escort Memory Systems").

The principal terms of the proposed arrangement, to be embodied in a Definitive Agreement executed at a later date, are as follows:

Background:

- Safety Syringes manufactures devices to enhance the safety and performance of pre-filled, unit-dose drug delivery systems.
- Escort Memory Systems develops and manufactures "RFID label and reader technology" consisting of microchips and labels used to track the contents of pharmaceutical containers and medical devices ("RFID Label/Reader Technology").
- Safety Syringes desires to purchase the RFID Label/Reader Technology from Escort Memory Systems for use in conjunction with Safety Syringes' sale of its devices, or separately, to third parties.

Orders and Delivery:

- Escort Memory Systems will deliver to Safety Syringes such quantities of RFID Label/Reader Technology as ordered by Safety Syringes from time to time, at such prices as mutually agreed by the parties.

Exclusivity:

- Escort Memory Systems will not sell or otherwise deliver any RFID Label/Reader Technology to any third party for use in hospital products and systems associated with product/patient tracking, record keeping and medication error prevention systems.
- SSI acknowledges that this clause may not apply to negotiations with third parties for use in the field of human healthcare already under evaluation with Escort Memory Systems as of the date of this Letter Of Intent.
- Safety syringes will not purchase RFID Label/Reader Technology from any third party.
- Neither party will grant or otherwise transfer to the other party any intellectual property rights. Without limiting the foregoing, Escort Memory Systems will maintain its patent positions in making, reading, and applications of RFID Label/Reader Technology.
- The parties will agree upon the terms of maintaining Safety Syringes' exclusivity to the RFID Label/Reader Technology hospital products and systems associated with product/patient tracking, record keeping and medication error prevention systems, including any minimum purchase requirements, fees or diligence obligations relating to commercialization of such technology.

This letter of intent is a non-binding proposal. All rights and obligations of the parties are subject to the negotiation, execution and delivery of the Definitive Agreement. If you are in agreement with the foregoing, please confirm such agreement by signing and returning to me a copy of this letter. At that time, I believe it would be appropriate to create the Definitive Agreement.

IN WITNESS WHEREOF, the parties have executed this letter of intent as of the date first set forth above.

Escort Memory Systems		**Safety Syringes, Inc.**	
By:	Cathleen Hadeen	By:	
Title:	Chief Financial Officer	Title:	PRESIDENT

ESCORT MEMORY SYSTEMS
A DATALOGIC GROUP COMPANY

170 Technology Circle
Scotts Valley, CA 95066
Phone (831) 438-7000
Fax (831) 438-5768

PRICE QUOTATION

Customer: Safety Syringes Inc.
Contact Name: Jim Caputo
Address: 1939 Palomar Oaks Way, Suite A
Address:
City, ST Zip: Carlsbad, CA 92009
Fax: 760 918 9908
Phone: 760 918 0565

Quote Number 011206A
Quote Date
Expiration Date
Page Number 1

Part #	Description	Qty	List Price per unit	Disc.Price per unit	Ext. Price	Delivery
App 083 NRE	Stage 1 - Proof of Concept Development. EMS will develop a proof of concept prototype to demonstrate the capabilities of a smart drawer antenna system capable of reading pharmaceuticals and medical supplies. A minimum of two compartments will be demonstrated with manual switching between the compartment antennas. SSI to provide samples of medical items to be tagged. Tag sizes to be approximately 13x33 but may very depending upon sample items submitted. This prototype will be limited to the antenna geometry and circuit design. No enclosure design is to be done at this stage. Upon successful completion of this task EMS will provide Stage 2 & 3.	1	$ 5,000.00	$ -	$ 5,000.00	2 weeks from receipt of PO
App 083 NRE	Stage 2 - Design Implementation. EMS will implement the design concept developed in stage 1 and incorporate a multiplexer design that will allow a single controller to pole multiple antennas/drawers minimizing the number of controllers required for this product solution. EMS will provide design input and consolation services to Oliver Design who will be manufacturing the pharmaceutical cabinet required for stage 3.	1	$ 25,000.00	$ -	$ 25,000.00	3 weeks from SSI approval to proceed. Note: EMS is closed form 12/24/31 through 1/1/02.
App 083 NRE	Stage 3 - Design Integration. EMS will sub-contract to Oliver Design Inc. (ODI) to design and manufacture a demo unit of the smart medical cabinet. ODI will provide a cabinet as depicted in the drawing presented at the 11/20/01 meeting at ODI. This unit will include a touch screen monitor, PC-based control, I/O circuitry and controls for automated drawer openings. EMS will provide the design input required for the successful integration of the antennas and controllers. EMS to provide the controllers and installation of the RFID circuitry. NOTE: SSI is to provide all software required to access the RFID controllers, drawer openings, and database management.	1	$ 17,000.00	$ -	$ 17,000.00	6 Weeks from Completion of Stage 2
				Total	$ 47,000.00	

Terms: Stage 1: Net 30 days. Regardless of performance or SSI's to decision to proceed to stages 2 & 3.
Stage 2 & 3: 50% prior to starting stage 2 and the balance due upon successful completion of stages 2 & 3.

Quote by: Brian Monahan

ESCORT MEMORY SYSTEMS (EMS), is a world-wide leader in the industrial automation field, offering solutions based on Radio Frequency Identification Systems (RFID) & Network Interface Modules.

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SafetySyringes, Inc.
1939 PALOMAR OAKS WAY, SUITE A, CARLSBAD, CA 92009
TEL 760.918.9908 • TOLL FREE 877.477.0776
FAX 760.918.0565 • www.safetysyringes.com
FED. ID.# 95-4305850

PURCHASE ORDER

P/O NUMBER	PAGE
100539-00	1

P/O DATE	ORDER TYPE	CHANGE/CANCEL
	Normal Release	

ORDERED FROM:
ESCORT MEMORY SYSTEMS
170 TECHNOLOGY CIRCLE

SCOTTS VALLEY CA 95066

SHIP TO:
SAFETY SYRINGES, INC.
1939 PALOMAR OAKS WAY
SUITE A
CARLSBAD CA 92009

BUYER	TERMS	ACKNOWLEDGE	CONFIRM	FOB	SHIP VIA	COL/PPD
C ANDREASSON	NET 30 DAYS	No	No	N/A	N/A	

LINE NUMBER	QUANTITY ORDERED BLANKET TYPE	U/M	ITEM NUMBER DESCRIPTION/COMMENTS	PRICE/UNIT	REQUESTED DATE	EXTENDED PRICE
1	1	EA	QUOTE 011206A-1 STAGE 1 -- PROOF OF CONCEPT DEVELOPMENT	5,000.0000		5,000.00
	1	EA	QUOTE 011206A STAGE 2 -- DESIGN IMPLEMENTATION	25,000.0000		25,000.00
3	1	EA	QUOTE 011206A STAGE 3 - DESIGN INTEGRATION	17,000.0000		17,000.00

Total Ext Price = 47,000.00

COMMENTS:

APPROVED BY [redacted] DATE 12/7/00

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Initial Specification
RFID Med Error System

1.0 Mfg System

1.1. Mfg database requirements
- 1.1.1. RFID Serial Number, 14 characters (can associate with lookup table?)
- 1.1.2. NDC Code, 12 characters
- 1.1.3. Product Name, 15 characters
- 1.1.4. Expiration Date, 8 characters
- 1.1.5. Lot Number, 12 characters
- 1.1.6. Company Name, 10 characters

2.0 Hospital System

2.1. Hospital Database requirements
- 2.1.1. Patient Name (Last, First, MI)
- 2.1.2. Patient Address information (Street, City, State, Zip)
- 2.1.3. Insurance billing information
  - 2.1.3.1. Group ID
  - 2.1.3.2. Insurer
  - 2.1.3.3. Insurer phone
  - 2.1.3.4. Insurer address
- 2.1.4. Patient ID (Number assigned by hospital or clinic)
- 2.1.5. Product administered fields
  - 2.1.5.1. Date given
  - 2.1.5.2. Healthcare worker administering product
  - 2.1.5.3. Time given
  - 2.1.5.4. Product given (Type, Lot #, Exp Date)

3.0 Procedure

3.1. Manufacturer
- 3.1.1. Manufacturer codes product with section 1.0 information and locks
  - 3.1.1.1. Inventory control systems up to the manufacturer (must be compatible with standard database systems

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3.1.2. Hospital

3.1.2.1. Receives product and scans for inventory control system (manual override available)

3.1.2.2. Dr. writes prescription and forwards to pharmacy (electronic)

3.1.2.3. Pharmacy pulls prescription and accumulates by patient (bagged or other)

3.1.2.3.1. Pharmacy scans for accuracy

3.1.2.3.2. Product delivered to floor storage cart

3.1.2.3.3. Inventory control system updated with product withdrawal

3.1.2.4. Nurse retrieves patient packet

3.1.2.4.1. Healthcare worker is identified via card or other

3.1.2.4.2. Patient information entered

3.1.2.4.3. Healthcare worker scans packet at bedside for go/no go

3.1.2.4.3.1. Healthcare worker initiates keypad at bedside for the scan to begin

3.1.2.4.3.2. No go alarm at bedside if match is not linked to pharmacy prescription

3.1.3. Reporting

3.1.3.1. Patient (key off patient in alpha order)

3.1.3.1.1. Patient/Patient ID

3.1.3.1.2. Products given to patient (Can be used for sub report for product type, lot #, etc.)

3.1.3.1.3. Date

3.1.3.1.4. Time

3.1.3.1.5. Healthcare worker administering product

3.1.3.2. Error report (key off patient in alpha order)

3.1.3.2.1. Patient/Patient ID

3.1.3.2.2. Date

3.1.3.2.3. Time

3.1.3.2.4. Healthcare worker

3.1.3.2.5. Product

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SUMMARY OF DEAL POINTS
REGARDING
SAFETY SYRINGES, INC. AND ESCORT MEMORY SYSTEMS, INC.

Background

- Safety Syringes, Inc. ("SSI") specializes in the manufacture and distribution of syringe safety devices. SSI desires to develop and commercialize a system of tracking and preventing medication error at hospitals (the "SSI System").
- Escort Memory Systems, Inc. ("EMS") specializes in developing hardware and components relating to RFID technology, including the manufacture of readers, writers, and RFID tags.
- SSI and EMS desire to enter a relationship whereby (a) EMS would become SSI's preferred provider of hardware components, and engineering, delivery and installation services relating thereto, used in the SSI System, and (b) SSI would become EMS' exclusive purchaser of such components, engineering, delivery and installation supplied by EMS.

SSI's Responsibilities

- SSI would initiate relationships with hospitals for sales of the SSI System.
- SSI would conduct an initial survey of each hospital to determine such hospital's technical needs and specifications for implementation of the SSI System, including but not limited to the following specifications: _____.
- SSI would deliver each hospital's specifications to EMS, and coordinate with EMS in the engineering and testing of the SSI System suitable for such hospital.
- SSI would act as the prime contact with each hospital regarding the delivery and installation of the SSI System at each hospital's site.
- SSI would act as the prime contact with each hospital regarding any follow-up maintenance and repair of the SSI System.

EMS' Responsibilities

- EMS would coordinate with SSI upon SSI's delivery of each hospital's specifications to EMS, regarding the engineering of SSI Services suitable for such hospital. EMS would perform such engineering in accordance with the applicable specifications agreed upon by the parties.
- EMS would deliver and install the SSI Services at each applicable hospital, and in accordance with the hospital's specifications and the applicable specifications agreed upon by the parties.

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- EMS would perform follow-up maintenance and repair of the SSI System at each hospital site, in accordance with the hospital's specifications and the applicable specifications agreed upon by the parties.
- With respect to the engineering, delivery, installation, maintenance and repair to be performed by EMS as described above, EMS would commit such components and services as requested by SSI or each applicable hospital from time to time, subject to maximum service levels agreed upon the parties.

Consideration

- SSI would pay to EMS _____ cents ($0.__) per tag supplied by EMS.
- SSI would pay to EMS such agreed upon prices for hardware components supplied by EMS in connection with the SSI Services.
- SSI would pay to EMS such agreed upon time-and-materials rates for all engineering, installation, maintenance and repair services performed by EMS in connection with the SSI Services.

Exclusivity

- EMS would not supply any party in the healthcare field, other than SSI, with readers, writers or tags that are the same or substantially similar to those used in connection with the SSI Services, or that are used for services that are the same or substantially similar to the SSI Services.
- SSI would not purchase from any party, other than EMS, readers, writers or tags for use in connection with the SSI Services; except that SSI shall have the right to purchase readers, writers or tags from up to five (5) third parties in the event EMS is unable to fulfill its engineering and delivery requirements agreed upon by the parties.

Third Parties

- Each of the parties may desire to subcontract aspects of its responsibilities to third parties, or to obtain the products or services of third parties to be used in connection with performing its obligations hereunder or supplying the SSI Services to hospitals (e.g. third party software manufacturers, for software to be supplied with components engineered by EMS, or third party distributors of EMS components). Each such third party relationship shall be subject to the approval of the other party. Both SSI and EMS shall remain primarily liable for their obligations under the agreement between them, notwithstanding the participation of any third parties.

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SafetySyringes, Inc.

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Board of Directors Meeting

Business Development RFID

Jim Caputo

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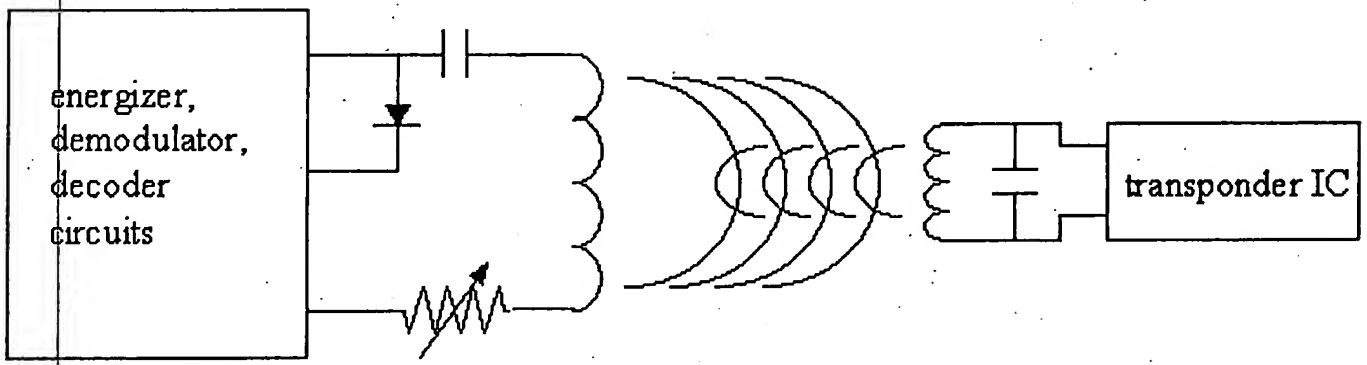
SafetySyringes, Inc.™

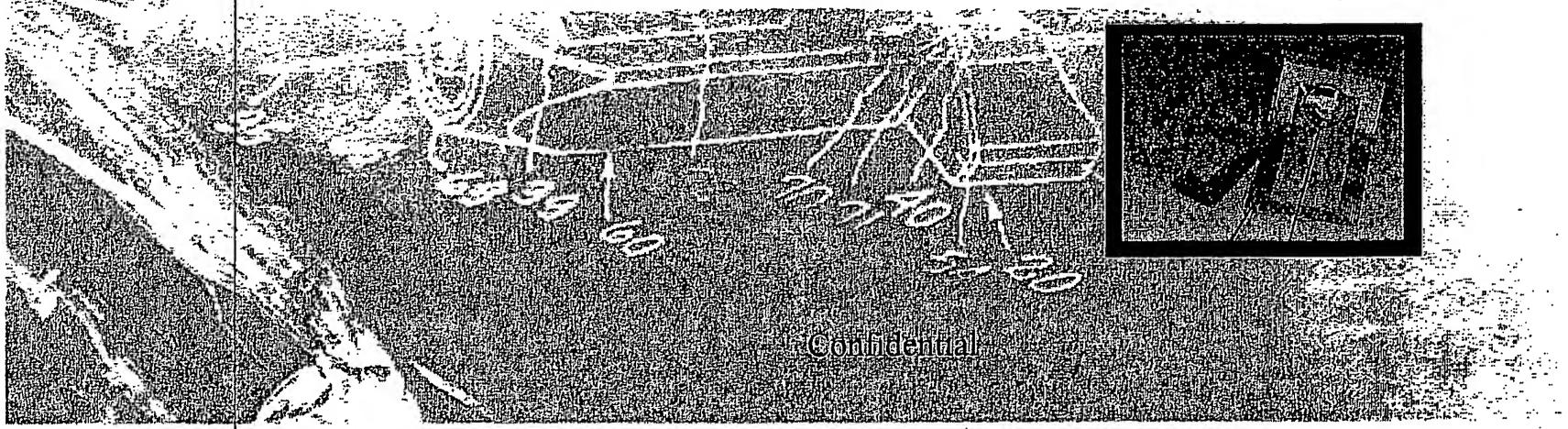
Business Development

RFID Technology – How it Works



RFID reader

RFID tag



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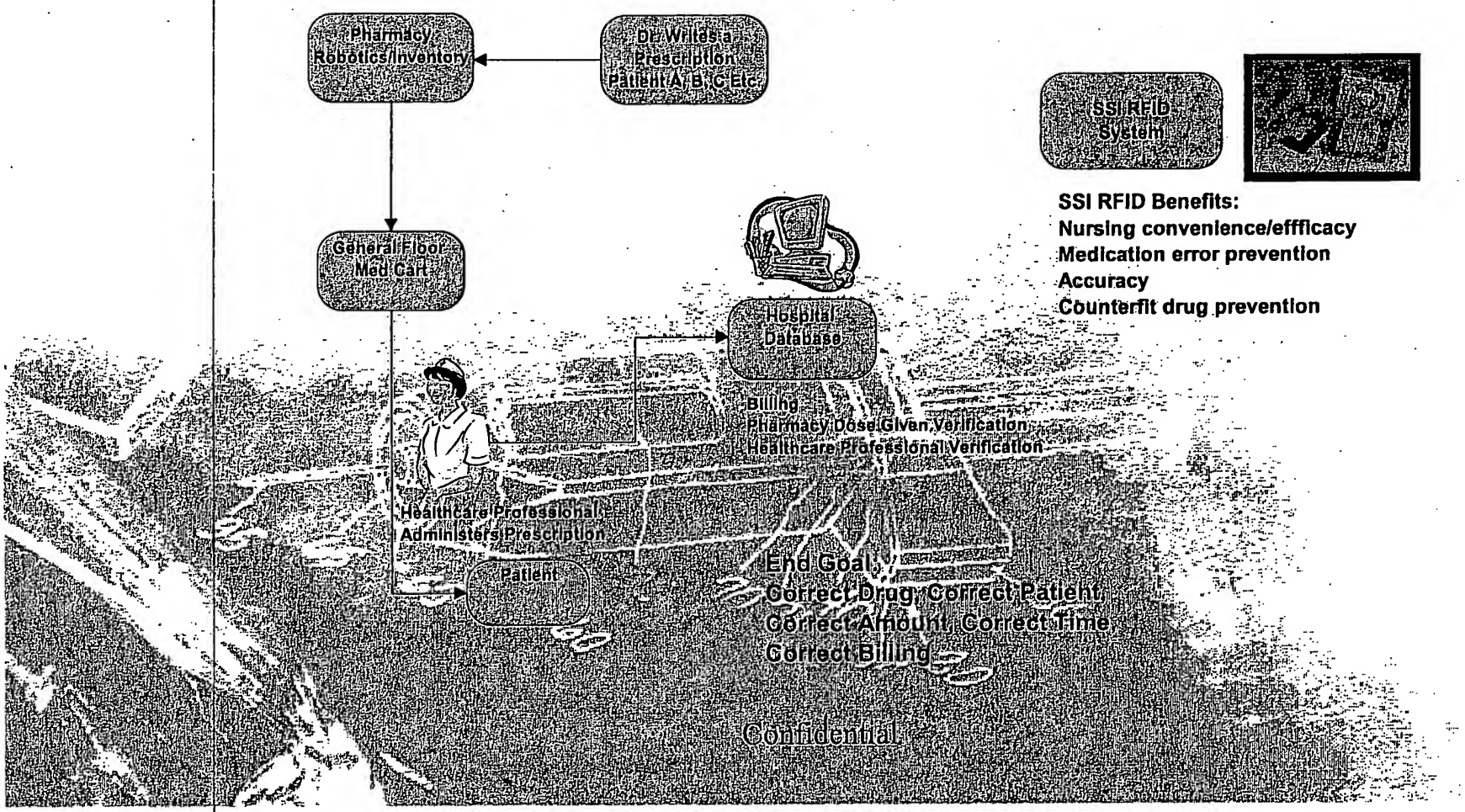
Business Development

RFID Technology

Hospital Scenario



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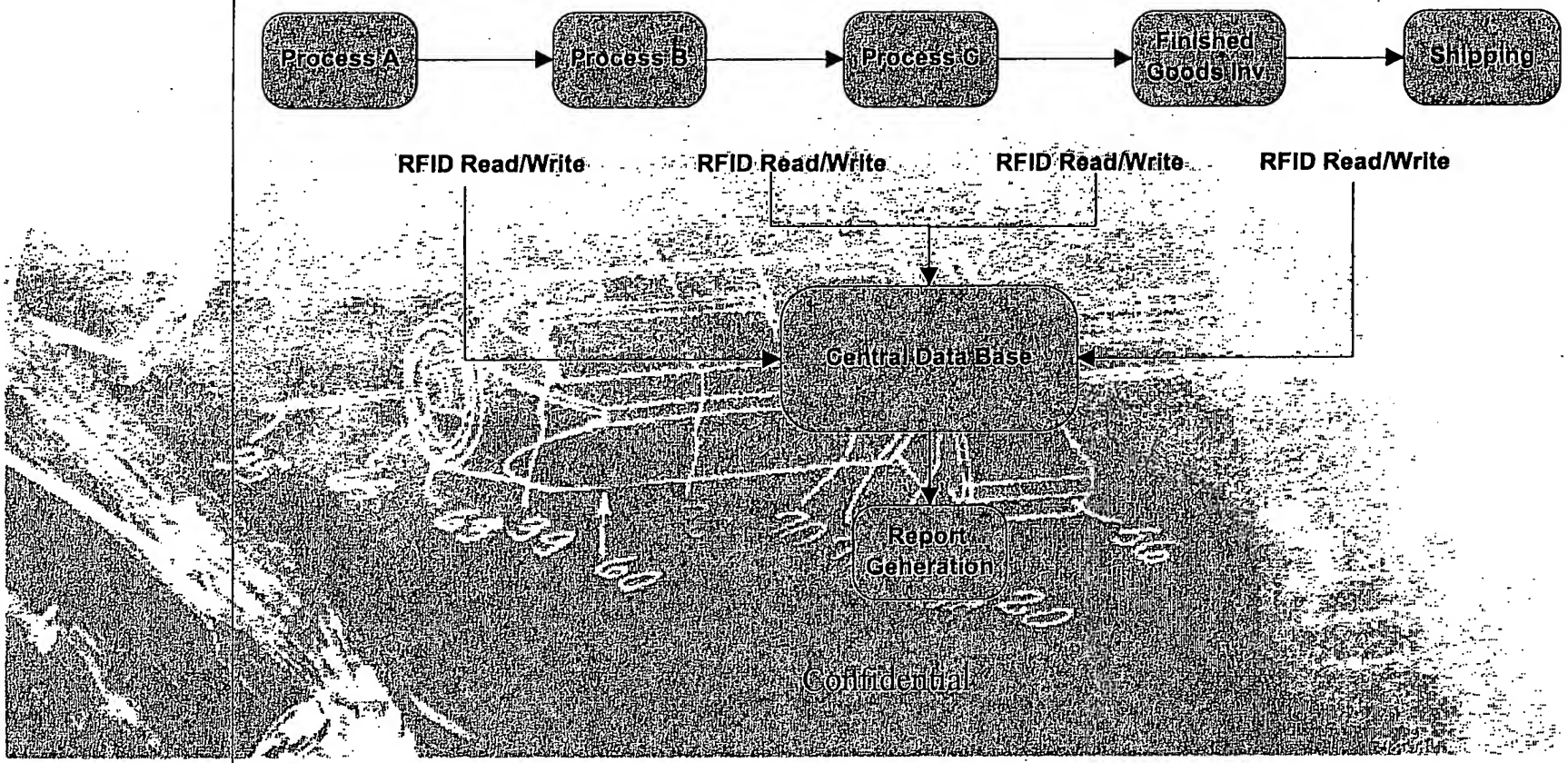
Business Development

RFID Technology

Manufacturing Process Tracking Benefit



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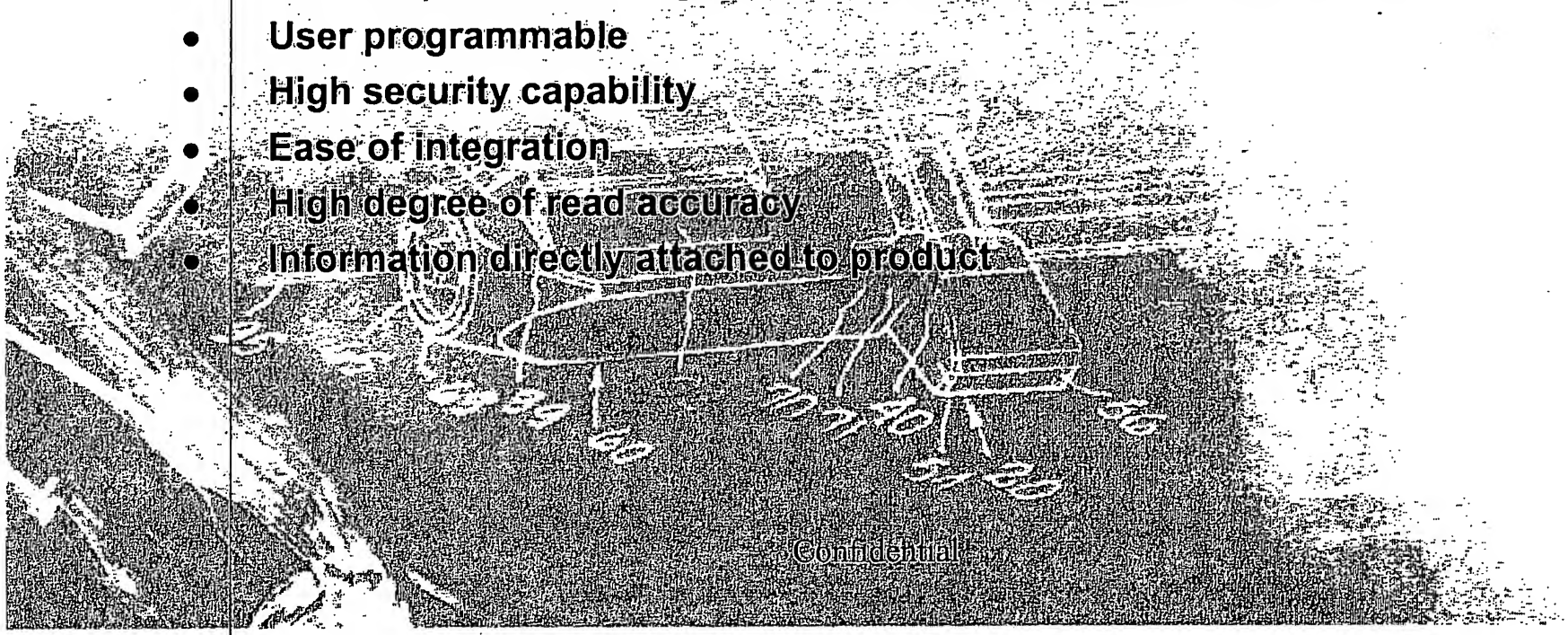
Business Development

RFID Advantages

- Ease of scanning, no line-of-sight for scanning necessary
- Any label orientation for scanning possible
- Insensitive to dirt and contamination
- Simultaneous scanning of several labels (multi label operation)
- User programmable
- High security capability
- Ease of integration
- High degree of read accuracy
- Information directly attached to product



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Business Development

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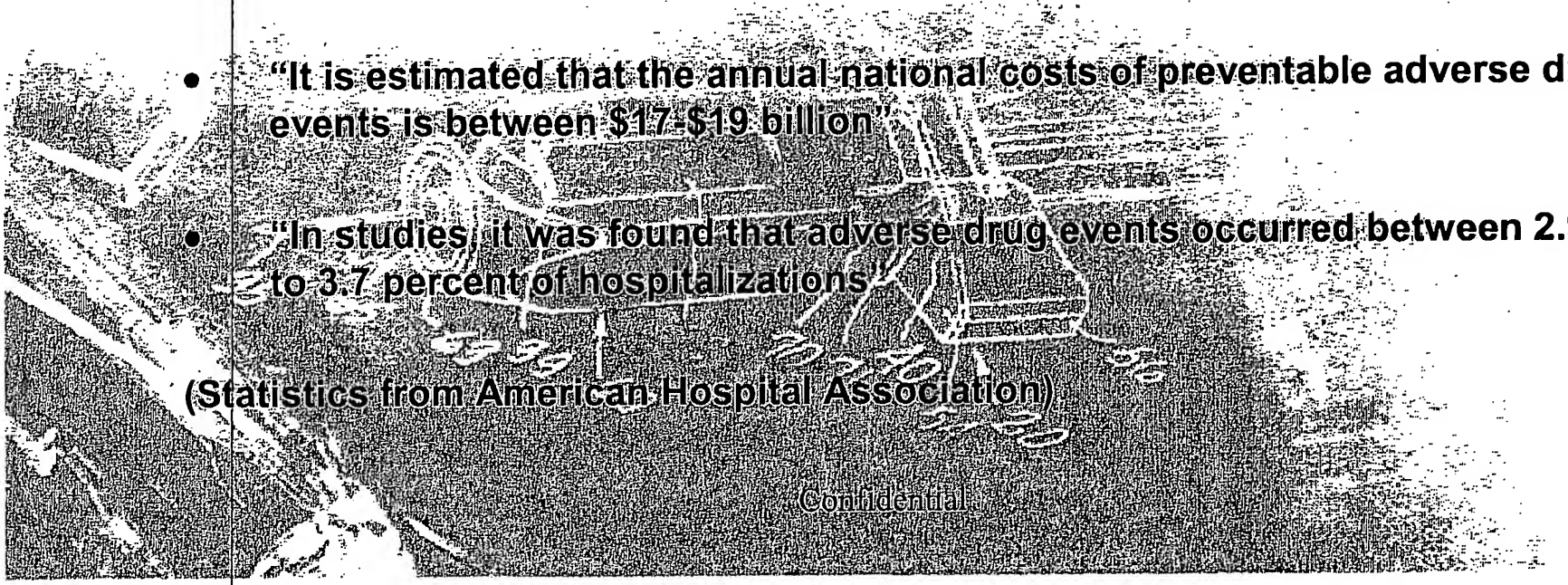
MED ERROR STATISTICS

- "In two studies, it was estimated that medical errors account for between 44,000 and 98,000 US deaths each year."
- "Medication errors are the eights leading cause of death at a rate greater than motor vehicle accidents, breast cancer, or Aids."
- "It is estimated that the annual national costs of preventable adverse drug events is between $17-$19 billion"
- "In studies, it was found that adverse drug events occurred between 2.9 to 3.7 percent of hospitalizations"

(Statistics from American Hospital Association)



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SafetySyringes, Inc.

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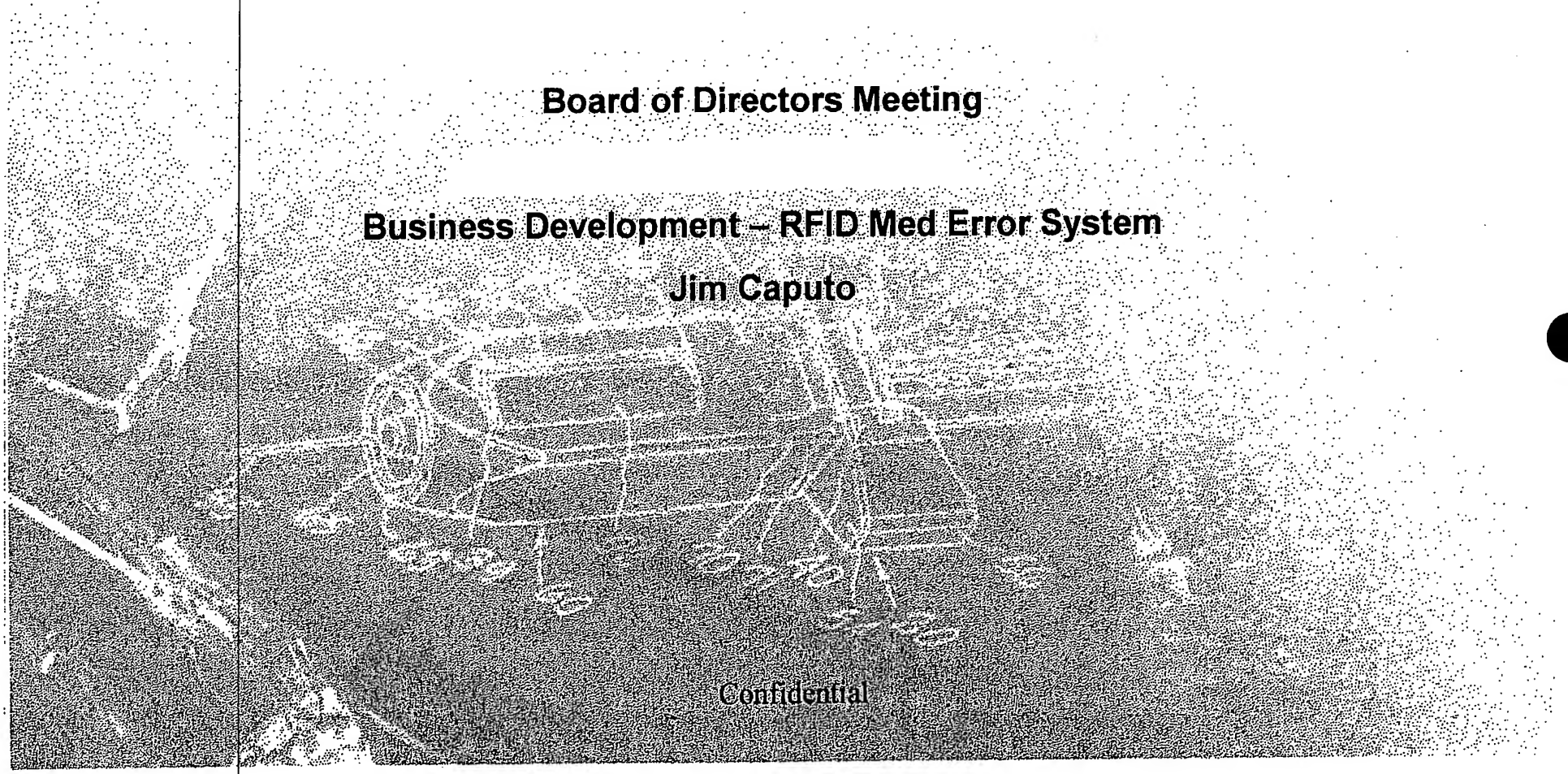
Board of Directors Meeting

Business Development – RFID Med Error System

Jim Caputo



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UltraSafe
PRODUCTS & SERVICES

SafetySyringes, Inc.

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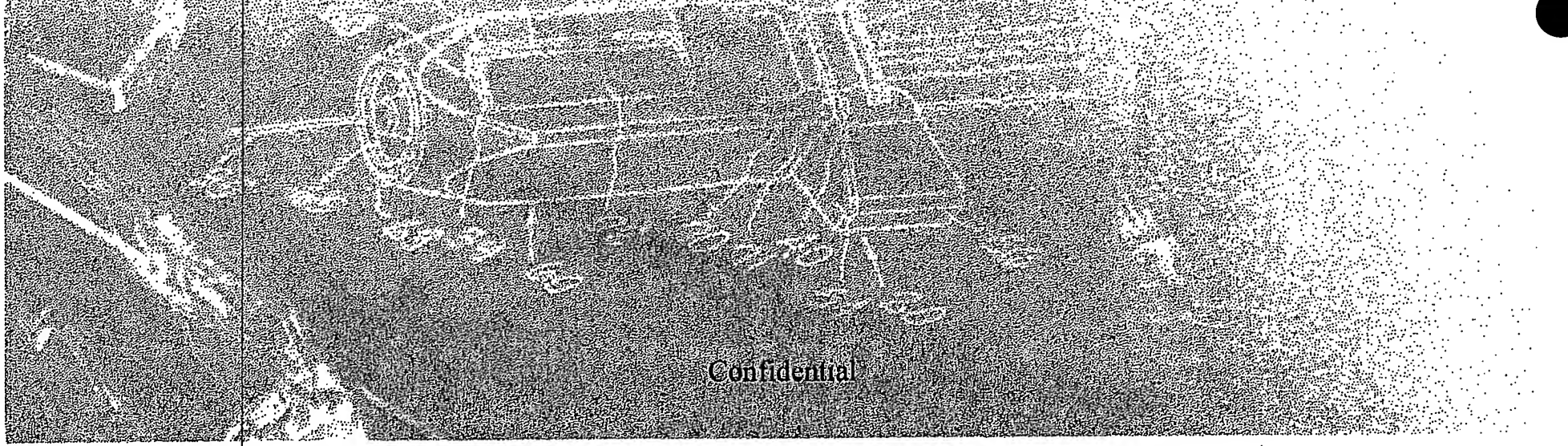
Board of Directors Meeting

Business Development – RFID Med Error System

Jim Caputo



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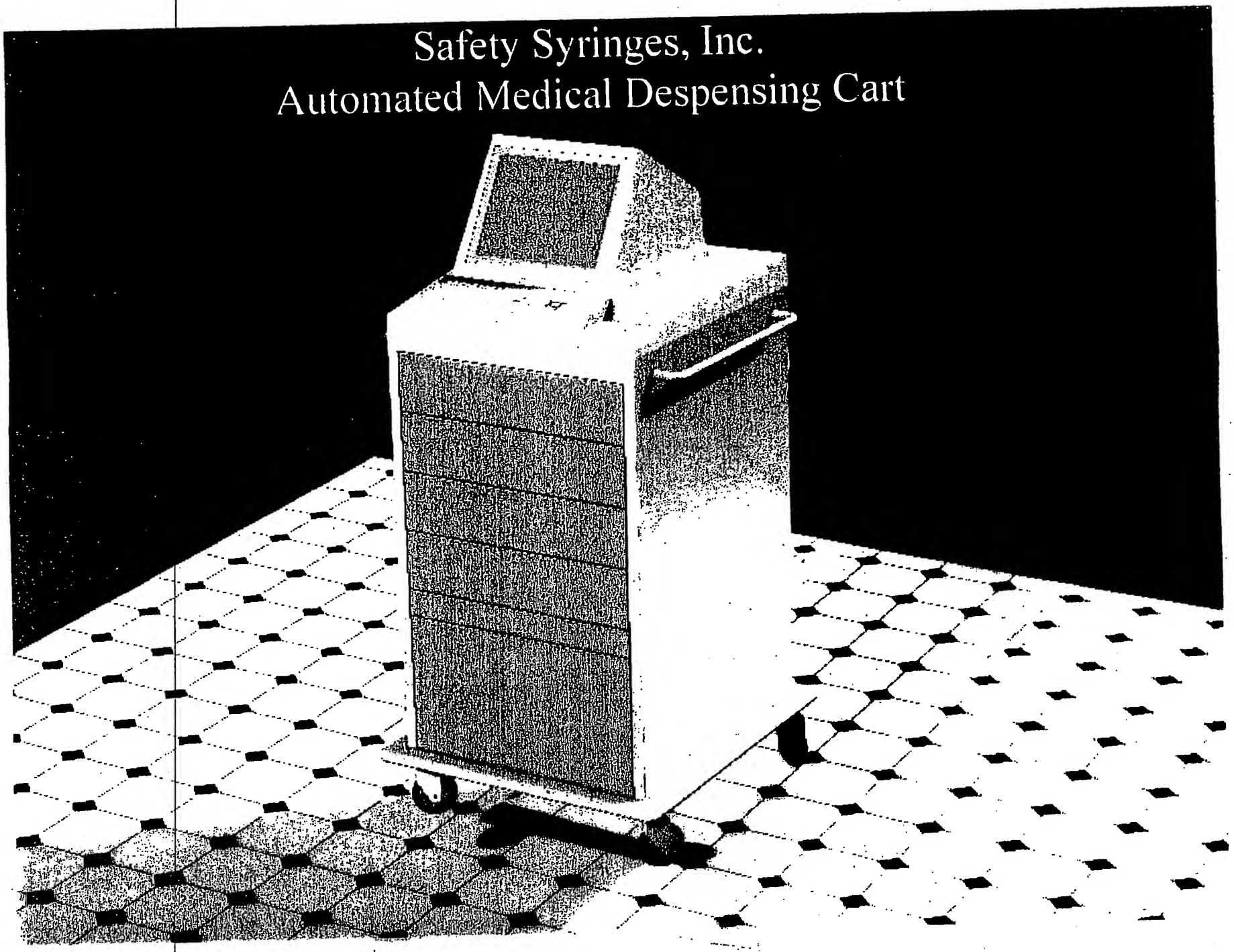
Safety Syringes, Inc.
Automated Medical Despensing Cart



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SSI MED ERROR SYSTEM

Pharmacy

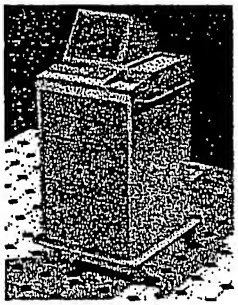
Plate/Tunnel Scanner

Reports
Prescriptions
Prescription Errors
Inventory Control Reports

Supply To Cart

Returns to Pharmacy

Med Cart



Reports
Inventory Control (Min/Max)
Lot/Date Code Control

Un-Used Drugs from Bedside Returned to Cart

To Bedside Scanner

Patient Bedside

Reports
Patient/Drug Report
Nurses "MAR" Report
Med Error Report
Billing to Patient Transfer
Nurse/Drug Report

Date:

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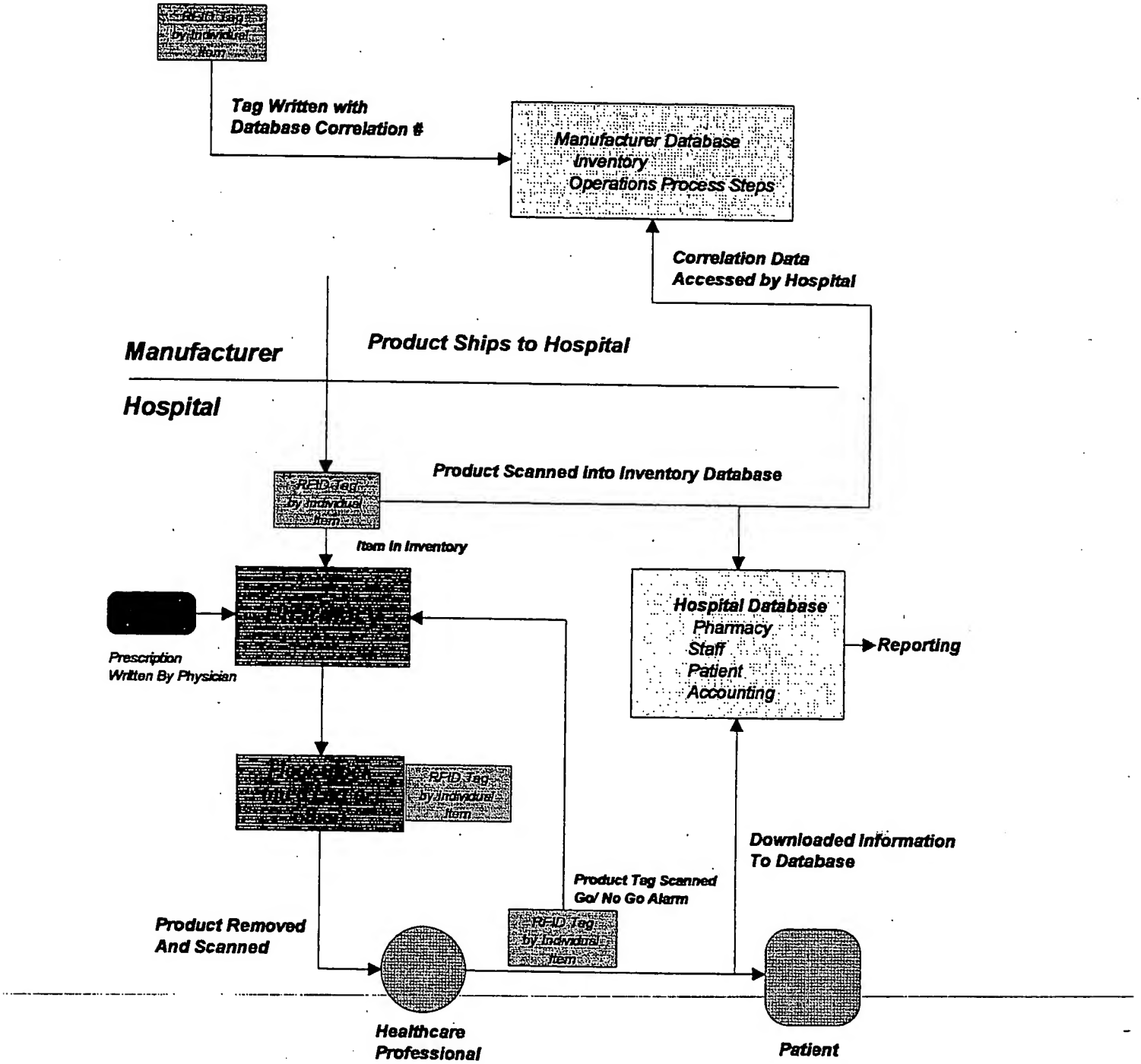
Medication Error System

Safety Syringes, Inc.

Jim Caputo



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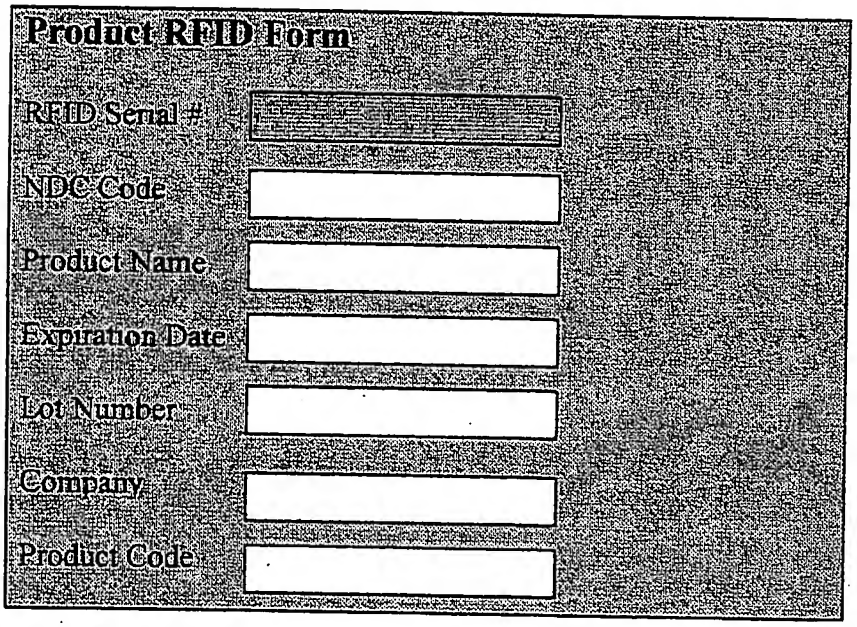
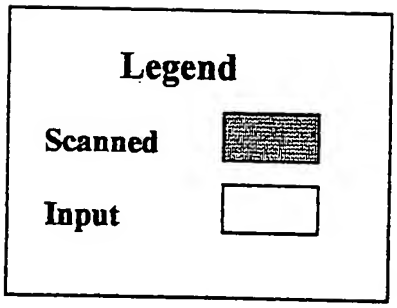
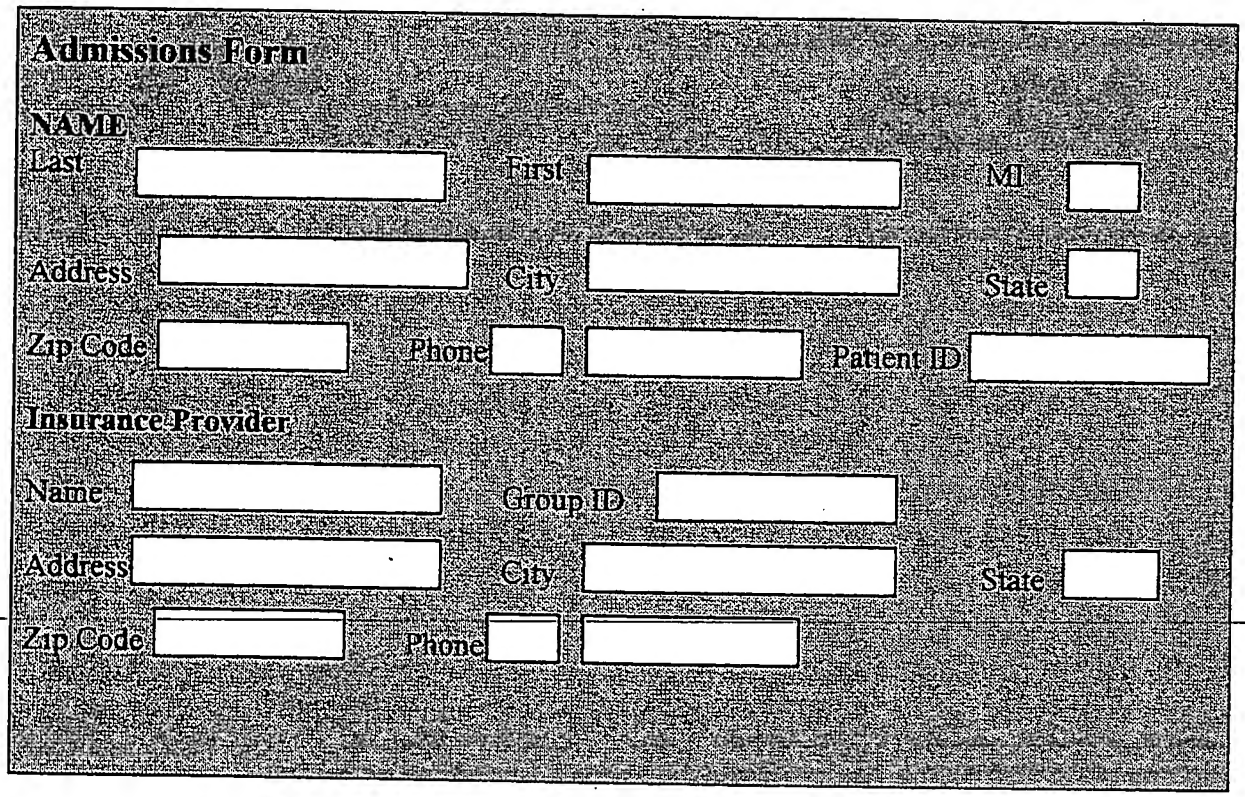
MFG Database Form Format 1of 1





HOSPITAL DATABASE 1 of 3



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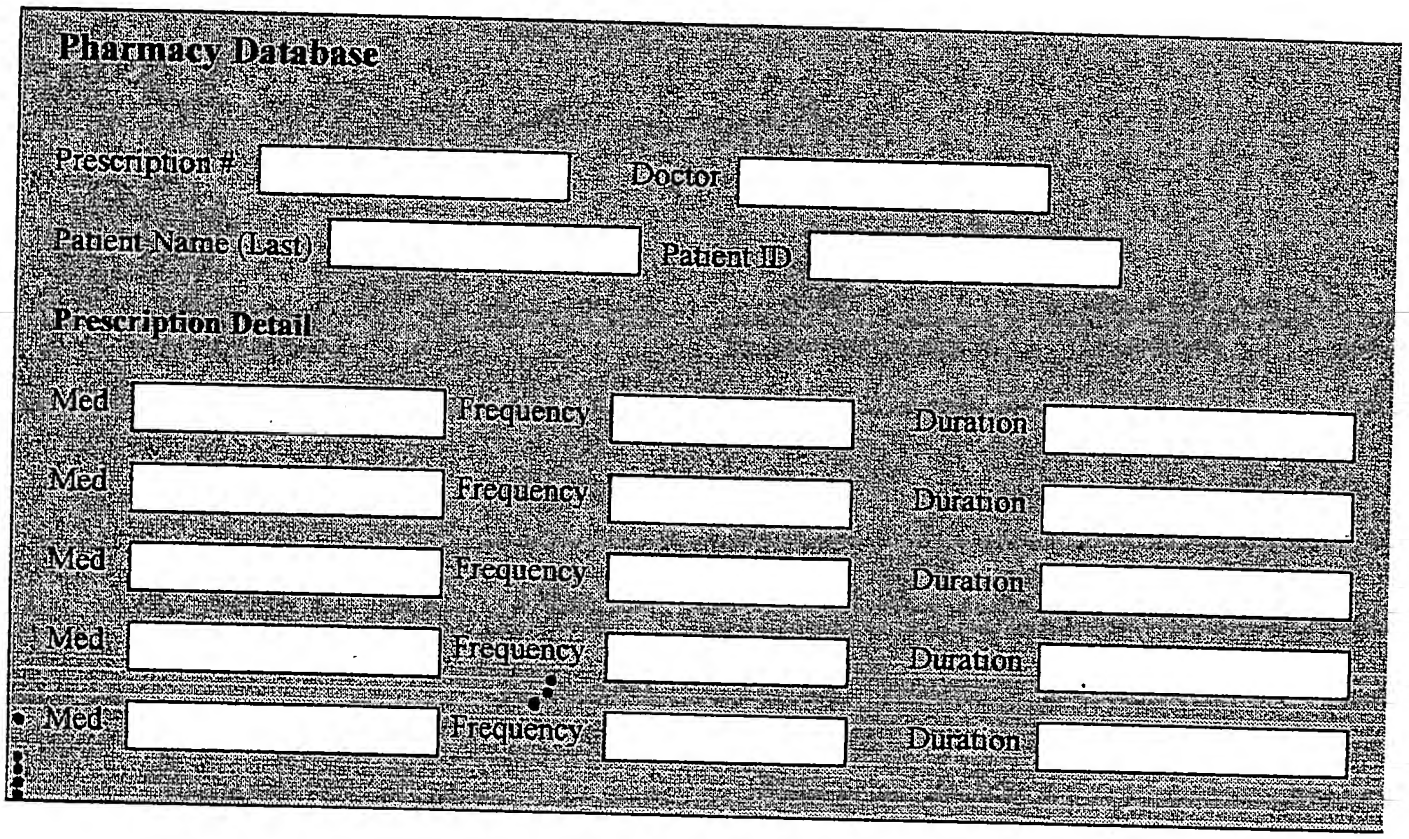
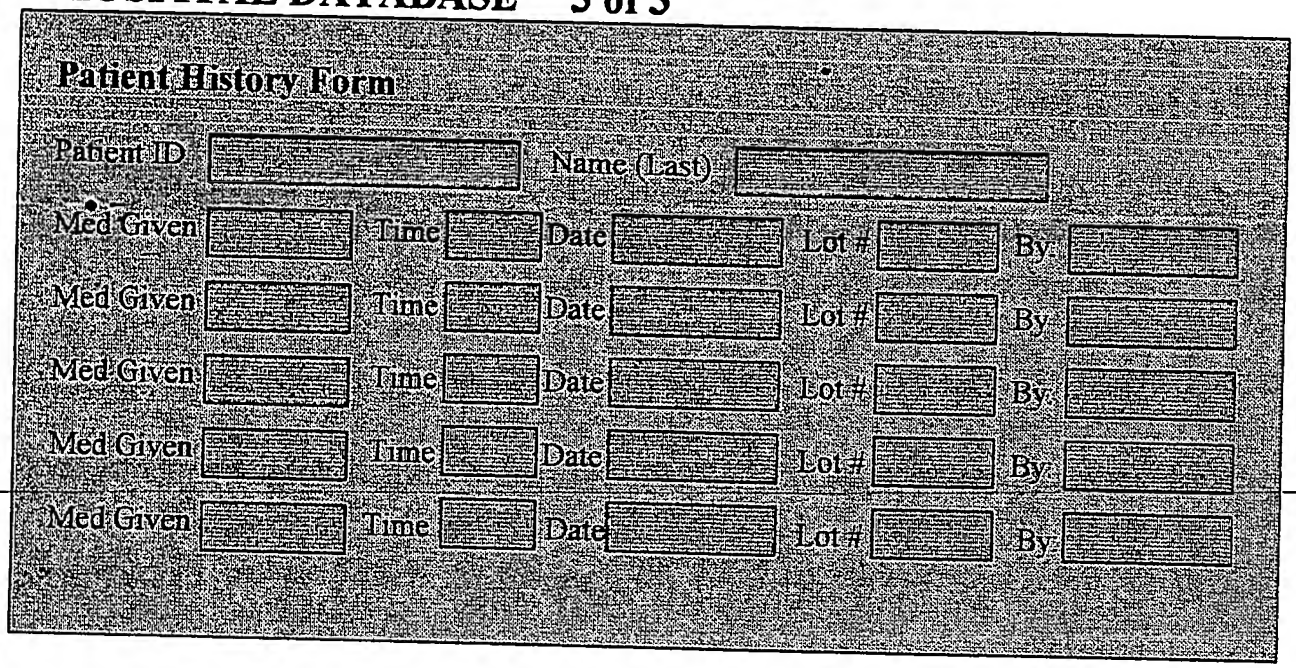
HOSPITAL DATABASE 2 of 3



HOSPITAL DATABASE 3 of 3



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NEXTWERK

PROPOSAL

SAFETY SYRINGES INC. DEMONSTRATION SOFTWARE

Prepared By: Mubashir A. Mian

BACKGROUND

This proposal is developed for Safety Syringes Inc., for the design and development of an exploratory prototype system. We thank you for the opportunity of proposing our development services and look forward to working with SSI on this project.

OBJECTIVES

The objectives of this effort are:

1) Provide working demonstration software to SSI.

2) The Software will demonstrate the core functionality of the system.

3) The Software will demonstrate to the SSI clients that the system is capable of delivering the required functionality for proposed concepts.

OUR CORE PROPOSAL

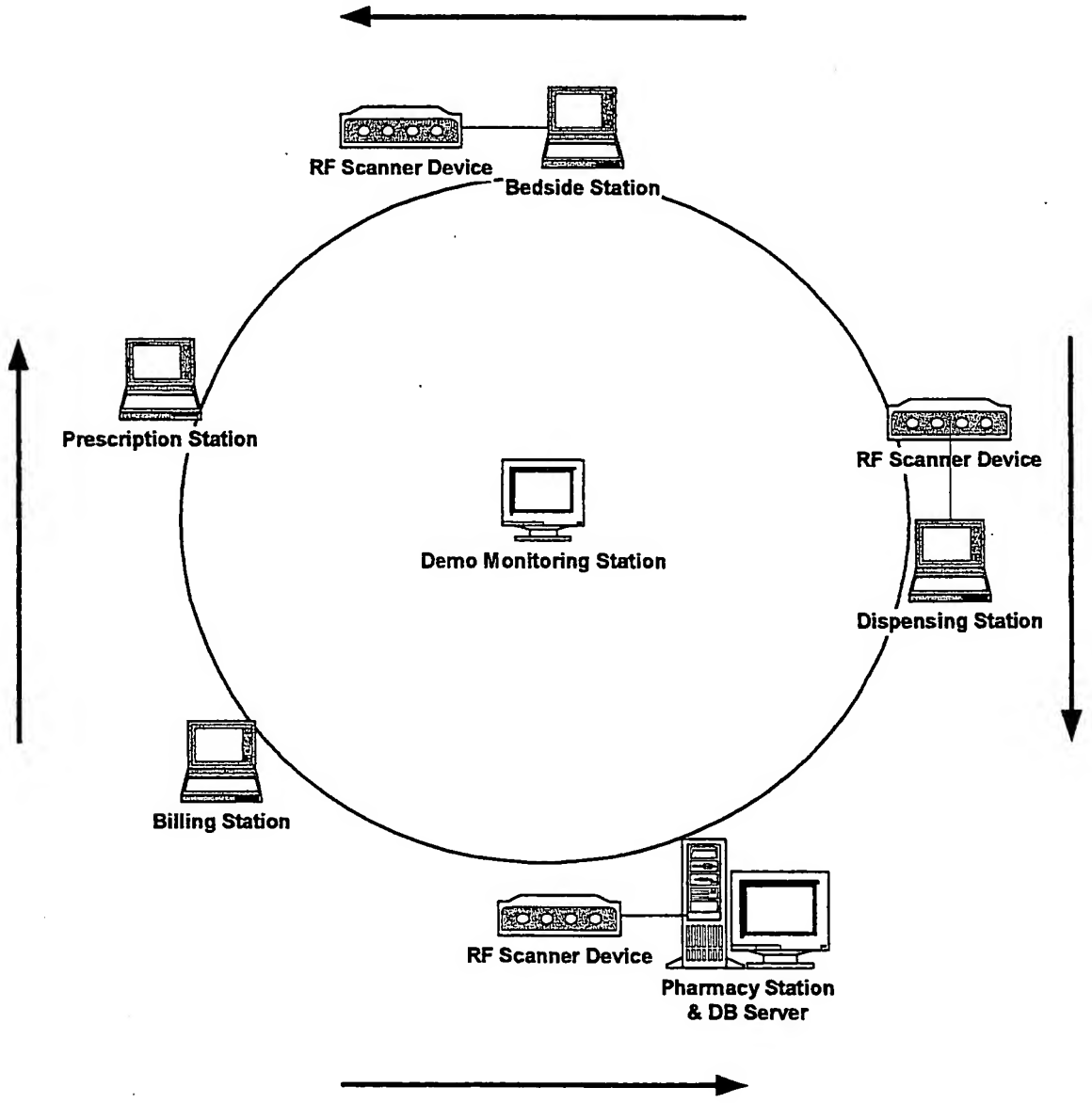
We propose to design, develop and deliver the demonstration software system as a turnkey solution. NEXTWERK has the expertise and market know-how to exceed your needs and expectations.

Exploratory prototypes require special treatment, in that they are high priority projects where specifications and requirements change from moment to moment. Every new build gives people newer ideas and these ideas require newer builds. This cycle goes on at a very fast pace until a consensus is built at the receiving end. We are one of the very few companies in Southern California who has a proven track record for this type of environment.

We offer you a rock solid team with a proven track record. Our engineers and developers are used to working in a fast paced development.

ARCHITECTURE OF THE PROPOSED SYSTEM

Our goal is to develop a robust client server demo application that will intelligently automate the Hospital drugs inventory system. System will consist of six different types of workstations with different functionality and a server. The over all system architecture is shown in the following picture.



SYSTEM FEATURES.

As mentioned earlier the application will consist of six client stations and a server. Each client station will have different functionality and features, their respected features are given below.

FEATURES OF BEDSIDE STATION:

1) Health worker identification using login/password or pin number.
2) Enter patient general Information.
3) View patient general information.
4) Enter patient medication information.
5) View and print patient MAR(Medication administration record).
6) Scan drug packet for go/no go (drug and patient association).
7) No go alarm.

FEATURES OF DISPENSING STATION:

1) Health worker identification using login/password or pin number.
2) View patient general information.
3) Search and view patient prescription information.
4) View patient MAR(Medication administration record).
5) Scan drug packet for accuracy and association with selected patient.
6) Hospital's inventory updating with drug withdrawal.
7) Updating the selected patient bill with drug withdrawal.
8) Hospital's inventory updating with drug return.
9) Updating the selected patient bill with drug return.
10) Drug/stock transaction tracking.
11) View dispensing station stock status.

FEATURES OF PRESCRIPTION STATION:

1) Doctor identification using login/password or pin number.
2) Search and view patient information.
3) Enter prescription for patient information.
4) View patient MAR(Medication administration record).
5) Forward prescription to pharmacy station.
6) View reports

FEATURES OF BILLING STATION:

1) Staff identification using login/password or pin number.
2) Search and view patient information.
3) View patient MAR(Medication administration record).
4) View patient billing history.
5) View reports

FEATURES OF PHARMACY STATION:

1) Staff identification using login/password or pin number.
2) Pharmacist approval of all Prescriptions prior to the release to prescription station.
3) Search and view drugs quantity information.
4) View stock status.
5) Add new drugs in inventory.
6) Associate RF tag with drug.
7) Remove drugs from inventory
8) Pharmacy station will also work as Database server.
9) View reports

FEATURES OF DEMONSTRATION MONITORING STATION:

We propose that a multimedia system be added to the demonstration lineup. This system will basically show in real time what events are occurring at each station. Later on, pre recorded video can be incorporated along with animations; and the system will be able to self demonstrate the SSI concepts and ideas.

In our budget, we have itemized this module for your convenience.

For now, we propose a basic system, which will provide the following features:

1) Graphically illustrate what each machine is doing (in almost real time.)

2) Show movement of patient billing data.

3) Show movement of inventory between different stations.

4) Provide a composite view (of the running demo) so that potential customers can stand in front of the system and understand the whole concept visually.

5) Where applicable, show movements of inventory and customer data as animations.

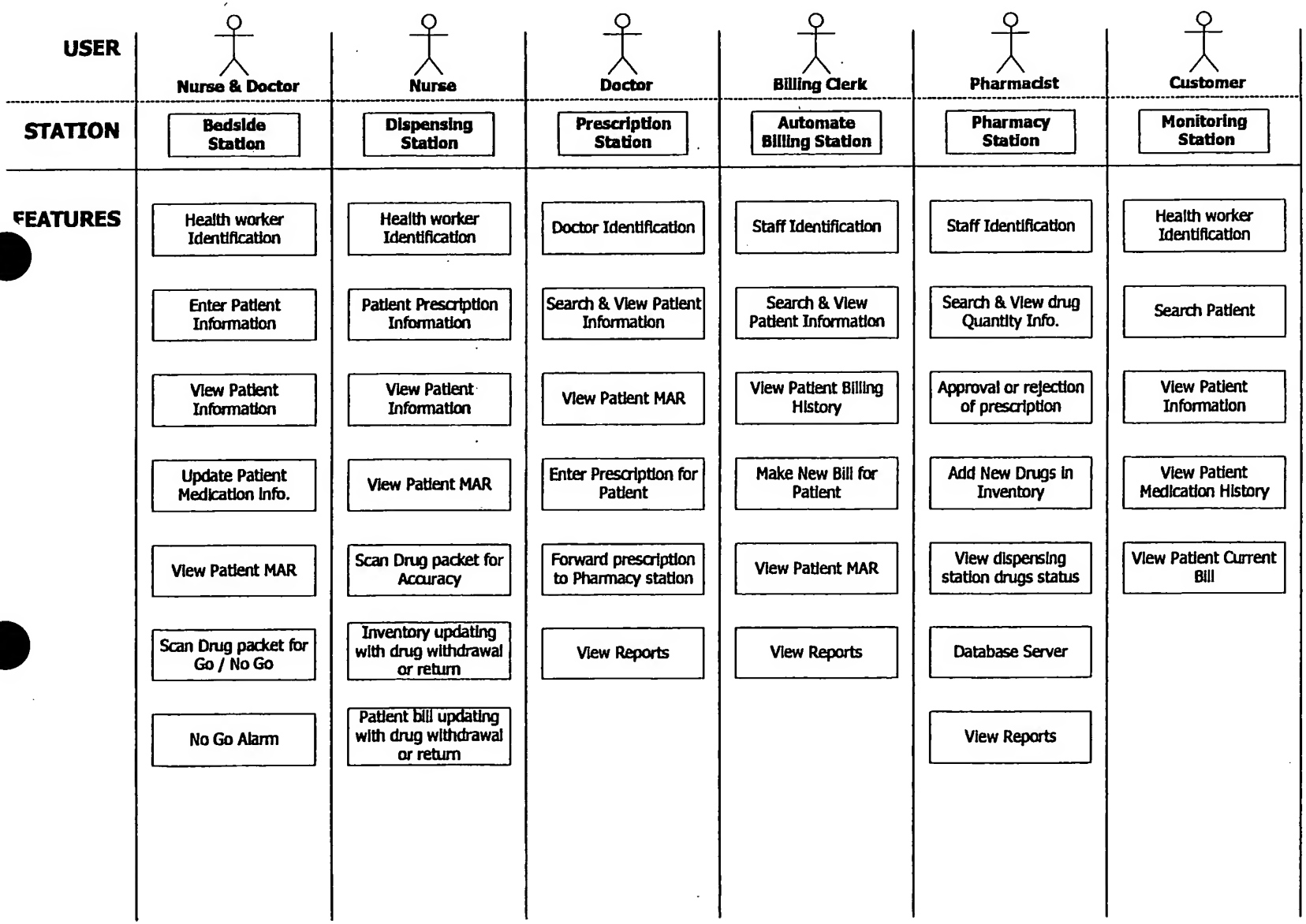
GENERAL FEATURES

1) All the inventory and billing information will be stored and updated by the system automatically. For this the pharmacy station will also work as central information repository system and database server.

2) Ability to store general information related to each drug such as manufacturer name, expiry date and etc.

3) Ability to produce different kinds of inventory and billing reports

4) Using monitoring station any one can view the patient information and MAR (Medical Administration Record).


USER
Nurse & Doctor
Nurse
Doctor
Billing Clerk
Pharmacist
Customer
STATION
Bedside Station
Dispensing Station
Prescription Station
Automate Billing Station
Pharmacy Station
Monitoring Station
FEATURES
Health worker Identification
Enter Patient Information
View Patient Information
Update Patient Medication Info.
View Patient MAR
Scan Drug packet for Go / No Go
No Go Alarm
Health worker Identification
Patient Prescription Information
View Patient Information
View Patient MAR
Scan Drug packet for Accuracy
Inventory updating with drug withdrawal or return
Patient bill updating with drug withdrawal or return
Doctor Identification
Search & View Patient Information
View Patient MAR
Enter Prescription for Patient
Forward prescription to Pharmacy station
View Reports
Staff Identification
Search & View Patient Information
View Patient Billing History
Make New Bill for Patient
View Patient MAR
View Reports
Staff Identification
Search & View drug Quantity Info.
Approval or rejection of prescription
Add New Drugs in Inventory
View dispensing station drugs status
Database Server
View Reports
Health worker Identification
Search Patient
View Patient Information
View Patient Medication History
View Patient Current Bill

DEVELOPMENT METHODOLOGY

We will work closely with the SSI appointed engineers and jointly develop the application modules. On approval, we will setup a web based collaboration environment where all the concerned staff from SSI and NEXTWERK will collaborate freely.

We will start by finalizing the User Requirements of each module. Once the Requirements are finalized, we will seek formal approval from SSI. Once you approve the requirements document, it will become the basis on which the final prototype will be approved.

We will take the time box approach to building this software. In this approach, we will plan delivery days on a short frequency (weekly) and deliver the latest builds as planned. This method is not so efficient but it keeps the developers on the same page with the customers.

After 3-4 prototype builds and subsequent approvals, the system will be complete for beta delivery.

The Beta delivery will be demonstrated to the SSI management at the Carlsbad office. If the Beta fulfills all requirements (as set forth in the requirements document) the project will be considered completely developed and delivered.

BUDGET

At this time with known specifications, our effort estimate is within 20% accuracy range. This means that the maximum planned deviation should not exceed 20% in either direction.

TIME ESTIMATE

DESCRIPTION	CALENDER WEEKS
Requirements Document	1-2 weeks
Approval of Requirements	1 week
Development of Beta	4 weeks
Beta to Final	2 Days on approval

Please note that we will take between 5 and 6 weeks to develop the software. We have factored one week to approve the requirements – which is totally in control of SSI. Essentially the timely delivery of this system depends on our ability to develop within 6 weeks and your ability to approve the final requirements within 1 week.

MONEY ESTIMATE

DESCRIPTION	US$
Station modules as described above (minus Monitoring Station)	12,500
Demo Monitoring Station	3,500

TERMS

50% advance on approval of this proposal, and 50% on successful delivery of the modules.

Please note that specialized RF scanning equipment and SDKs (software development kits, if applicable) will be client-provided. Our budget does not include investing in specialized hardware or software for this project.

NEXT STEP

The next step is project approval.

...end...

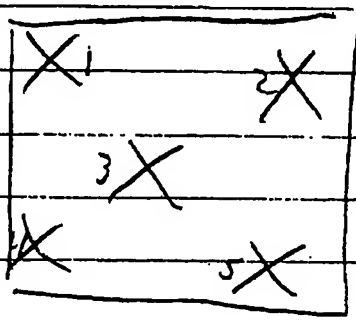
EMS Experiments

Prepared by: J CARLO
Date: 1

Plate Reader : 11 3/4 x 13 3/4 CONFIDENTIAL

Experiment #1

Time out
Time out



6 sec read / 3 times ea Loc
Height from plate 5 1/8
PLATE

X - Read Location
Sample - See bagged prot

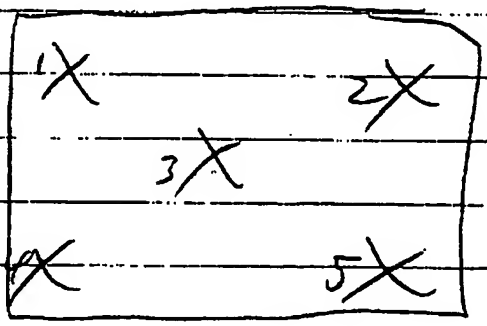
1 - 5/5 read; 5/5 read 5/5 read
2 - 4/5 read; 5/5 read 5/5 read
3 - 5/5 read; 5/5 read 5/5 read
4 - 5/5 read; 5/5 read; 5/5 read
5 - 5/5 read; 5/5 read 5/5 read

Note: reads complete in 1 sec or less
Units were stacked in random orientation
(bagged with label at top of bag)

06/22/2005 12:59 PM Safety Systems, Inc. 760-918-0588 6/9

EMS Demo

Experiment #2 CONFIDENTIAL

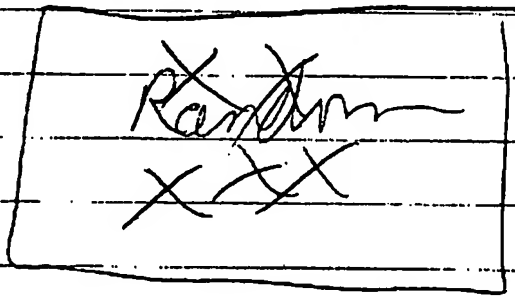


2" distance from plate
X = Locations
Samples: 5 ea
Cagged units
tag on top of ba
6 sec read
3 reads each Location

1	5/5	5/5	5/5
2	4/5	4/5	4/5
3	5/5	5/5	5/5
4	4/5	4/5	4/5
5	5/5	5/5	5/5

<1 sec all reads complete

Exp #3



2" distance from plat
X - Location of each unit
Samples 1 ea
3 reads, 6 sec/read

5/5	5/5	5/5

<1 sec all reads were complete

APPLICATION EVALUATION TEST REPORT FORM

Originator:	M. Gaskill	**Report Written By:**	J. Coronado	**AER No:**	083
Customer:	Safety Syringe	**Report Revision:**	1	**Status:**	Open

(Refer to Application Request Form for Application Description and Requirements)

"This document is strictly confidential and intended solely for the EMS customer listed above. It may contain information, which is covered by legal, professional, or other privilege. This information may not be disclosed to third parties without the execution of a signed non-disclosure agreement. If you are not the intended addressee you must not use, disclose, or copy this transmission."

TEST METHOD Describe products used, modifications, software, hardware, and other set details.

Test Hardware:	Test Software:	Items Under Test:
1. LRP-20 Rdr/Wrtr	1. Antenna Tune V.1.5A	1. LRP-L1331 Tags
2. Safety Syringes	2. WinDemo V.0.1F	
3. Desktop PC		

Stage One – Proof Of Concept

TEST #1: Single 14" X 14" Smart Drawer

- Create a smart drawer capable of reading tagged medical supplies.
- Incorporate the use of active and passive coils as needed.
- Using Antenna Tune, test for readability of LRP-L1331 tags in all orientations.
- Using WinDemo, test for multiple tags in the field.

TEST #2: Dual 6" X 8" Smart Cell Compartments

-

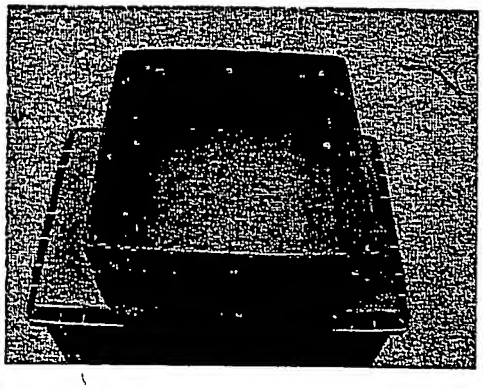
TEST CRITERIA Describe the parameters that determine if the implementation is a success such as; range, speed, tag orientations, etc.

Criteria: Prototype system must be capable of reading all tags in the drawer and meet all the requirements set forth in the stage one proof of concept document.

TEST RESULTS AND OBSERVATIONS Provide test data.

TEST #1: Single 14" X 14" Smart Drawer

A.)



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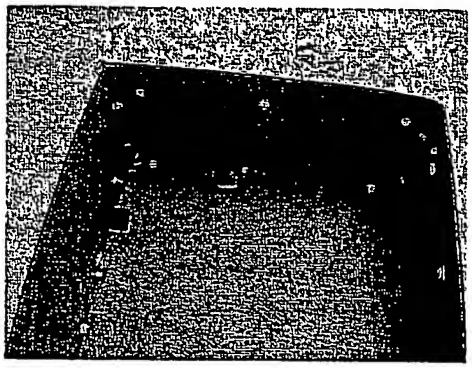


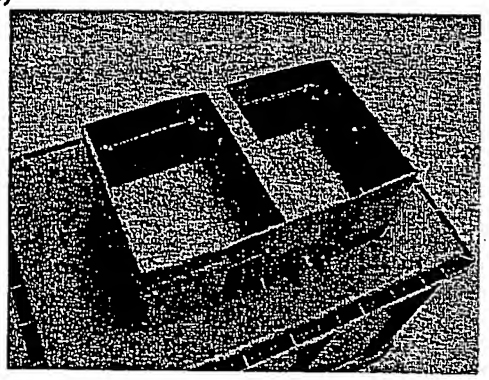
SUMMARY:

In this phase a 14" X 14" smart drawer was created. The smart drawer consisted of two active coils each resonated at 13.56Mhz, and a toggle switch. The switch is used to toggle between the two coils and acts as a crude multiplexer. Only one coil is active at a time. When one coil is on, the other coil loop is physically opened through the switch. Opening one loop while the other is on ensures that the opened loop does not interfere with the tuning of the closed active loop. If a tag is not seen in a given orientation, the switch is thrown and the opened coil is closed and radiates a different RF pattern to increase the probability of reading the tag. Quickly toggling or multiplexing between the two coils will make this transparent to the end user.

This 14"x14" smart drawer works very well when the tag is adhered flat on the object. The more parallel the tag is to the either coil, the better the readability of said tag. However, when the LRP-L1331 tag is wrapped around the syringe itself, the smart drawer antenna cannot read the tag. This is because the tags' surface area is reduced. Essentially the tag is made even smaller and the flux radiating from the antenna is not dense enough to cut through the tag windings.

TEST #2: Dual 6" X 8" Smart Cell Compartments (4" DEEP)

A.)



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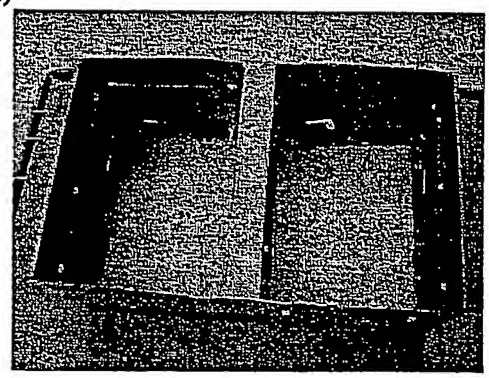
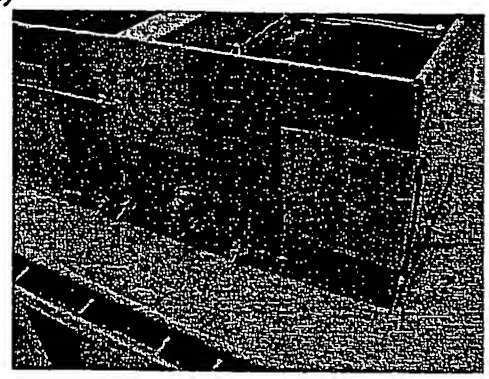


Cont. Next Page

Test #2 Cont.

C.)



SUMMARY:

In this phase a 6" X 8" two cell campartment was created. Again, each cell consists of two active coils resonated at 13.56Mhz. Two toggle switches were used in this design. One switch toggles between the two coils in each cell and the other switch toggles between the two cells themselves. Only one cell and only one coil in each cell is on at any given time. This ensures that there is no interference between coils and cells. If a tag is not seen in a given orientation, the switches are thrown and the opened coil is closed and radiates a different RF pattern to increase the probability of reading the tag. Quickly toggling or multiplexing between the two coils will make this transparent to the end user.

This 6" X 8" dual compartment antenna works extremely well in all orientations. The smaller cell size helps to generate a more dense RF field and therefore reads the tags wrapped around the syringes easily.

TEST CONCLUSION Reviewers comments and suggestions

Attach lab notes, photos, sketches and samples when applicable

Completed By: J. Coronado **Date:** _____

Med Error System
Safety Syringes, Inc.

Rev A
01-02-02

Requirements Document – Demo System

1.0 Pharmacy Station

1.1 User password/pin access (production unit could have fingerprint ID)

1.2 Scan incoming drug (box of 25 max)

1.3 Scan outgoing drug to Med Station

1.4 Input/receive patient information from database (form)

1.5 Input/receive prescriptions from database (form)

1.6 Prescription approval to send to med station

1.7 Pharmacy Station Hardware

1.7.1 Pentium 4 computer (controller for all stations)

1.7.2 EMS reader/writer (Tunnel?)

1.7.3 Ink Jet Printer

2.0 Med Cart

2.1 Maximum dimensions: (Driven by pocket/drawer size)

2.1.1 Height: 42 Inches (not including screen height)

2.1.2 Width: 24 Inches

2.1.3 Length: 26 Inches

2.2 Hardware:

2.2.1 Touch screen - 15" preferred

2.2.2 Keyboard

2.2.3 Drawers to be spring loaded to open 2" (approximate) when initiated by software.

2.2.4 Individual pocket will be correlated to RFID Tag to initiate a light for proper drug to be removed.

2.2.5 Manual close to latch.

2.2.6 System to read upon drawer close

2.2.6.1 Inventory action/reconciliation to be initiated upon drawer Closing.

2.2.6.2 Alarm if drawer not closed

2.2.6.3 Alarm if reconciliation yields incorrect results

2.2.7 Reporting ability on screen at this station

2.2.7.1 Printed report at pharmacy station unit

2.3 Number of active drawers: 3

2.3.1 Additional mock drawers up to 8 maximum (non usable for RFID)

2.4 Number of pockets per drawer: 8

2.4.1 Pocket Size Maximum Dimension: 8"x 8"

2.4.2 Pocket interior to conceal antennas/hardware

2.5 Med Station features

2.5.1 User password/pin access (production unit could have fingerprint ID)

2.5.2 View patient list (touch screen)

2.5.3 View patient prescription list (touch screen)

2.5.4 View Patient MAR History (touch screen)

2.5.5 Initiate drug removal per prescription (touch screen)

2.5.6 Initiate drug returns to return drawer

2.5.6.1 Automated reconciliation from pharmacy

2.5.7 Automated inventory reconciliation of drugs

2.5.8 Initiate drug/patient link on reader/writer on unit upon retrieval from drawer.

2.5.9 Initiate drug returns to return drawer

2.5.10 View Med Cart drug dispensing (on-screen/hardcopy reports by patient, drug, date, time, etc via touch screen)

2.5.11 View station stock status (Min/Max system trigger for pharmacy restocking)

3.0 Bedside Station

3.1.1 User password/pin access (production unit could have fingerprint ID)

3.1.2 Scanned drug/patient go/nogo administration; assume patient ID card for identifier (alarm if no go; visual on screen if go)

3.1.3 Automated patient/drug/billing update upon scan

3.1.4 View patient listing/general information

3.1.5 View patient MAR (option to send to printer)

3.1.6 Bedside Station Hardware

3.1.6.1 EMS flat plate reader/writer

3.1.6.2 Touch screen – 15" preferred

3.1.6.3 Cart to hold screen/reader/writer

SafetySyringes, Inc.™

Screen Outline

I. Med Station

a. Log-In Screen
   i. SSI Logo
   ii. Pin # Field

b. Activity Screen
   i. Drug retrieval for a patient
      1. Patient listing fields
         a. Prescriptions by Patient/frequency/Dr.'s name etc.
         b. Drug location on screen with coordinates
         c. Drug removal from cart reconciliation (scanned when drawer is shut)
         d. Drug association with Patient (after drug is removed and placed on scanner)
      2. Unused drug return from a patient bedside
         a. Drugs returned fields (scanned)
      3. Med Station restocking
         a. Item fields for restocking cart (scanned)
      4. Reports
         a. MAR report (by patient/Nurse)
         b. Drugs administered
            i. Per time frame
            ii. Per patient
            iii. Per doctor
         c. Prescriptions/filled and non-filled
         d. Errors report
            i. Patient bedside
            ii. Retrieval errors
            iii. Stocking errors (items from pharmacy don't match items received by med station etc.)

II. Pharmacy Read Station

a. Log-In Screen
   i. SSI Logo
   ii. Pin # Field

b. Activity Screen
   i. Drugs received and added to inventory database (scanned)
   ii. Drugs leaving pharmacy going to med cart (scanned)
   iii. Report generation
      1. Restocking med station report
      2. Errors report
         a.

b. Stocking errors (items from pharmacy don't match items received by med station etc.)

III. Patient Read Station

a. Log-In Screen
   i. SSI Logo
   ii. Pin # Field
b. Activity Screen
   i. Administration to patient (scanned)
      1. GO/No-GO Screen after scan
   ii. Report generation
      1. Incorrect administration
      2. MAR report (by patient/Nurse)
      3. Drugs administered
         a. Per time frame
         b. Per patient
         c. Per doctor

Meeting Agenda
EMS/SSI
01/17/02

SSI
Med Error System

1. Schedule Review

2. Med Cart Design

    a. Software Integration/Issues
        i. Command Structure of hardware system
        ii. EMS Reader

3. Patient Station Design
    a. Options
    b. Read Capability of EMS Flat Plate Reader

4. Pharmacy Station
    a. Options
    b. Read Capability of EMS Flat Plate or Tunnel System

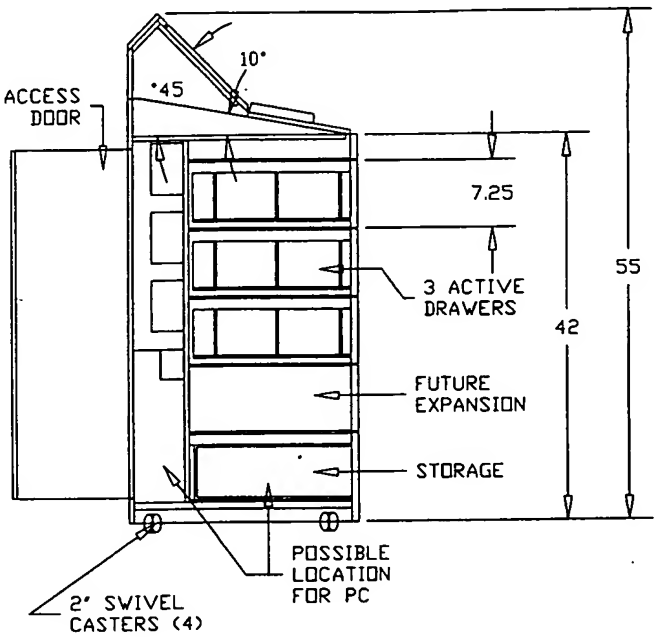
5. Project Issues

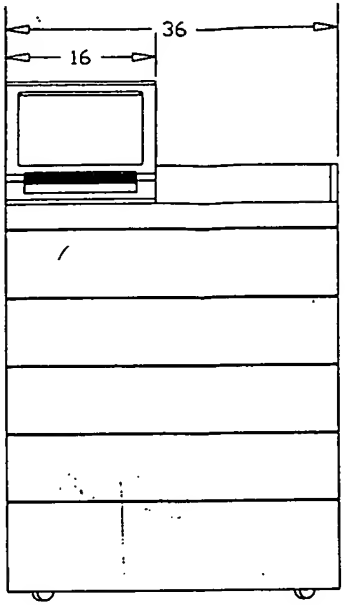
6. Project Cost

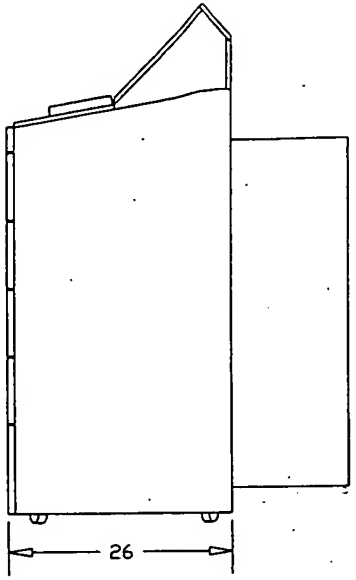
O-PARTS O-TOOLS □-ASSE... △-TEST / INSP
LEGEND LEGEND

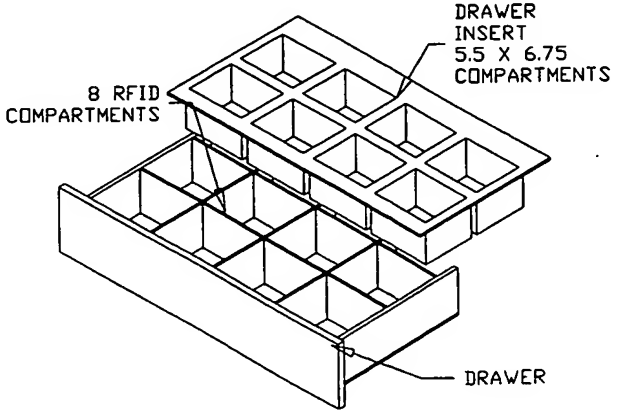
CONFIDENTIAL

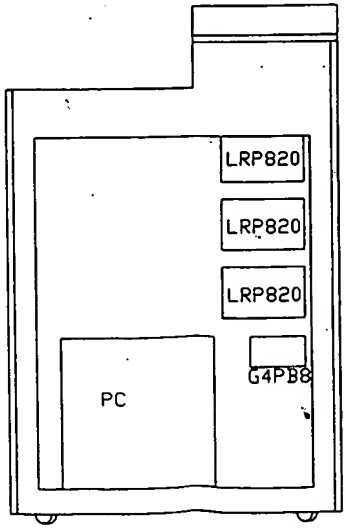
REV	ECO#	BY	DATE	CHANGE	APPR/DATE
1.A					











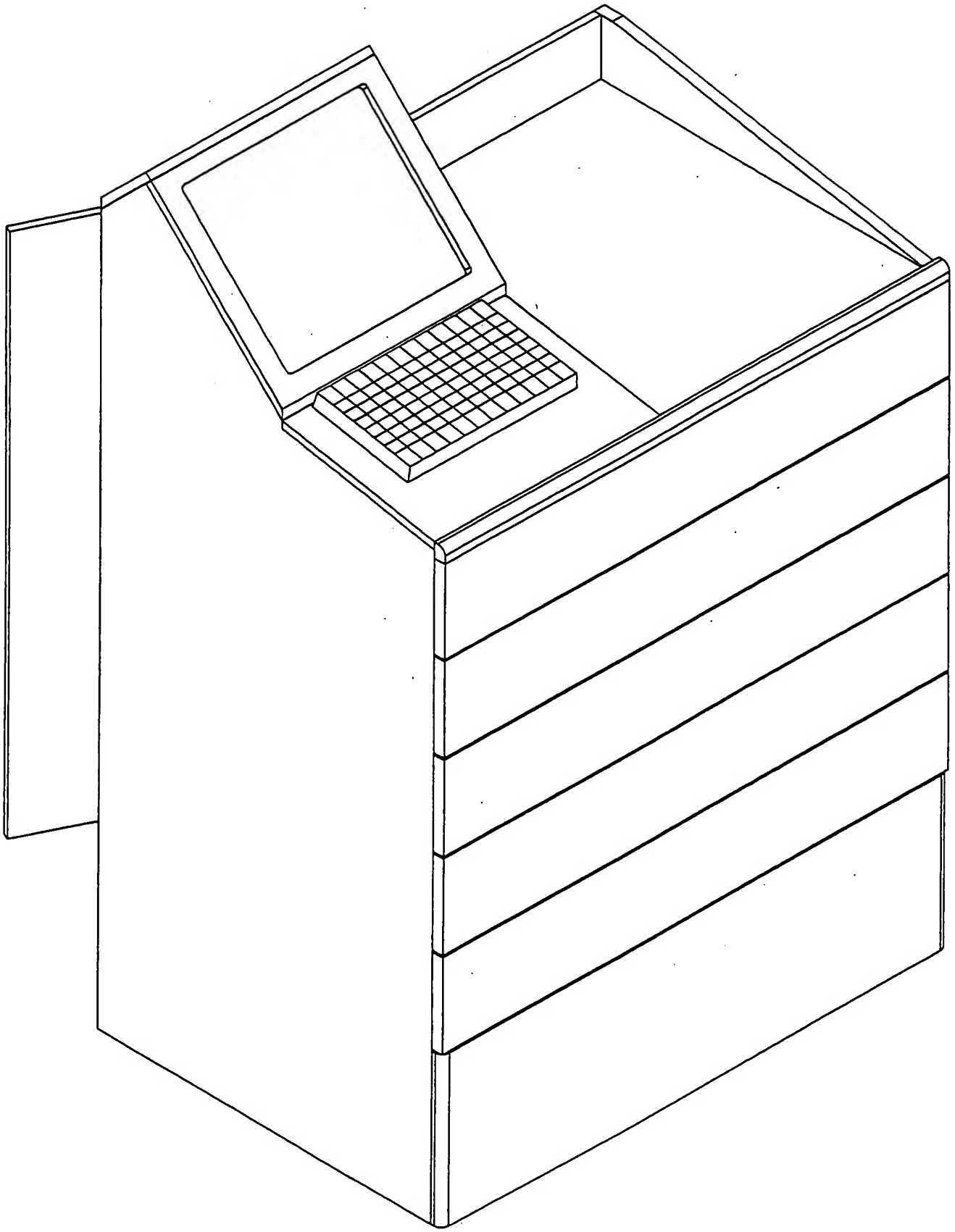
ITEM	QTY	PART DESCRIPTION	EMS P/N

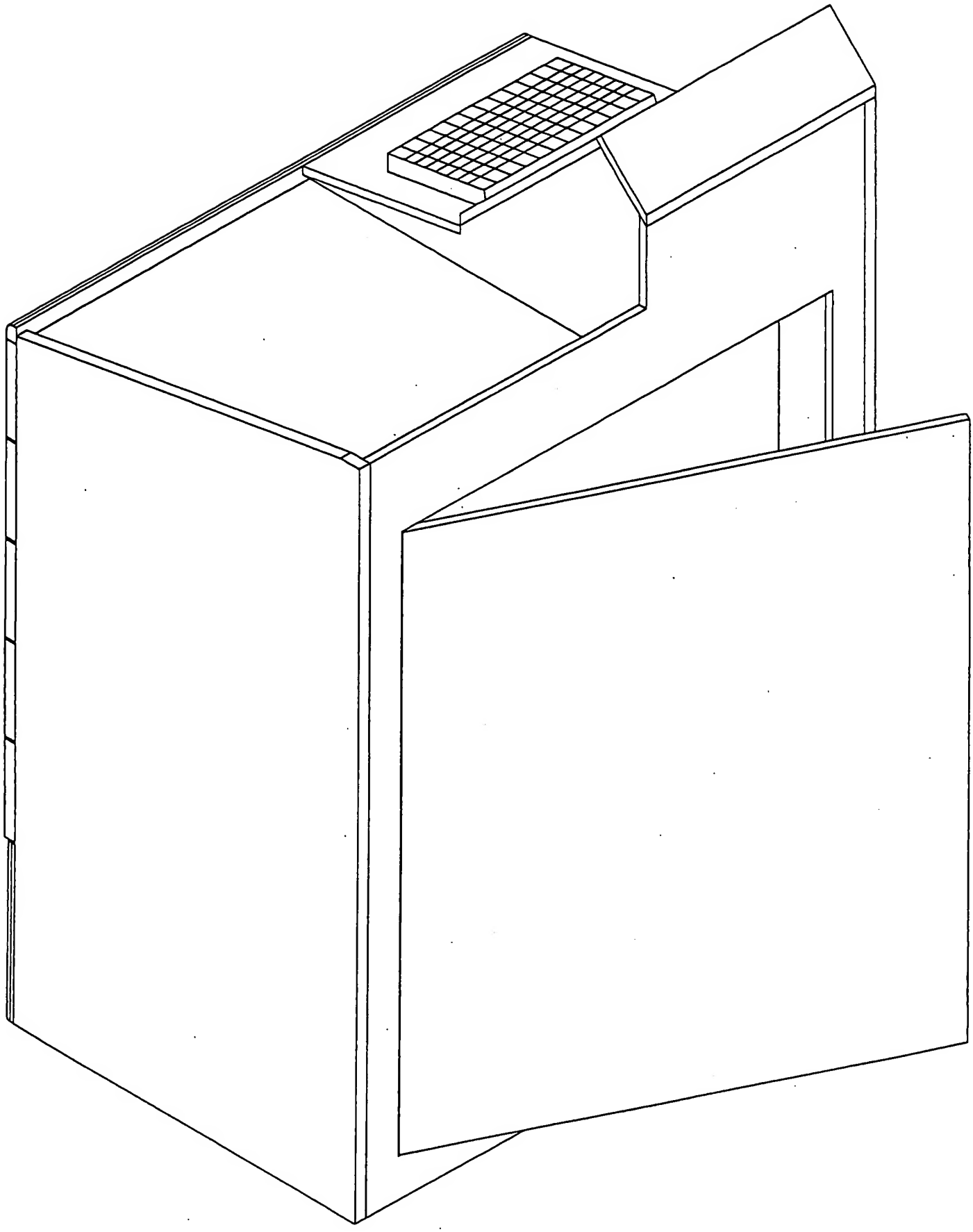
TOLERANCES UNLESS SPECIFIED OTHERWISE ARE:
ANGLES 1/2°
.XX ± .01
.XXX ± .005

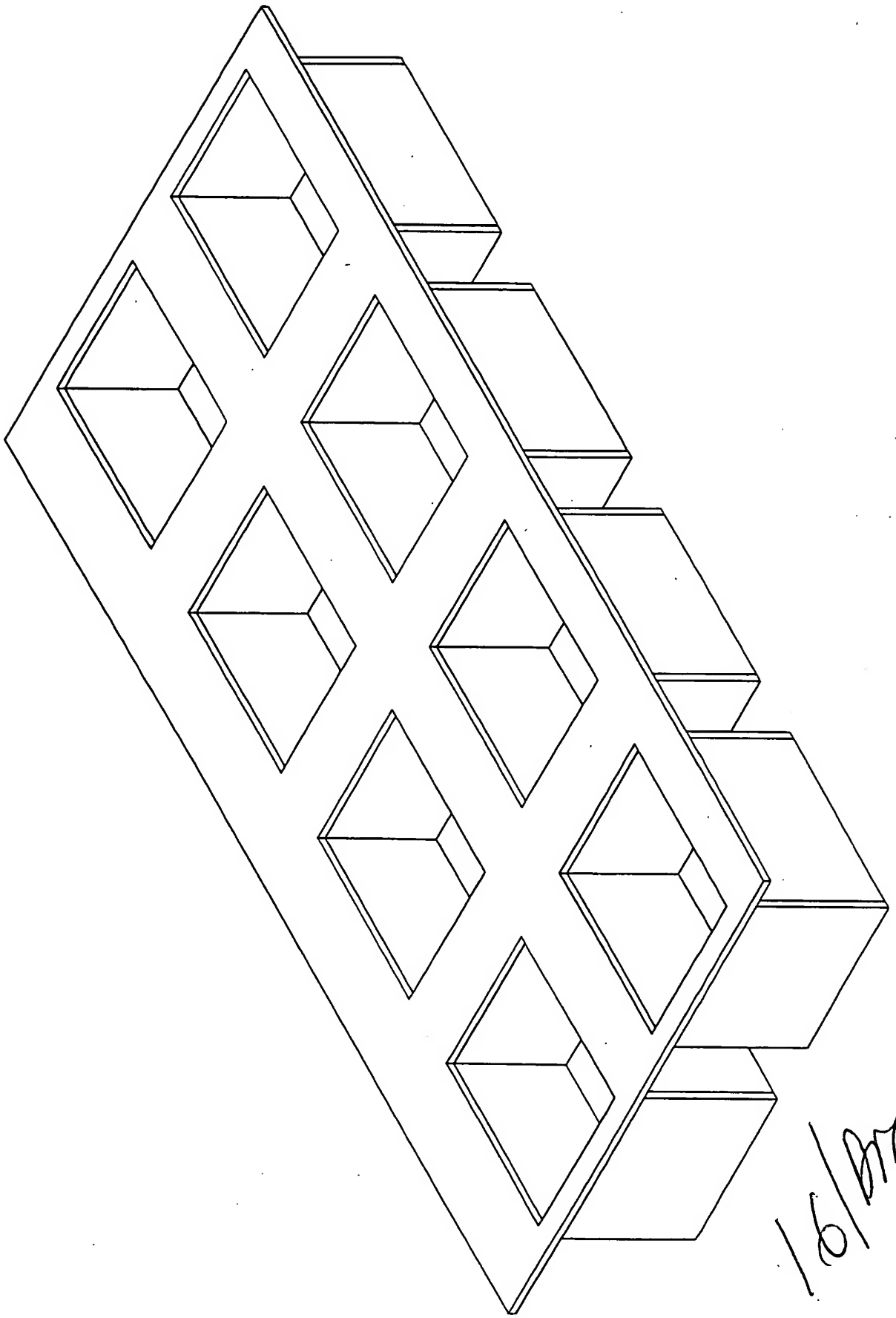
ESCORT MEMORY SYSTEMS
A DATALOGIC GROUP COMPANY

MED STATION WITH RFID SPECIFICATION DWG

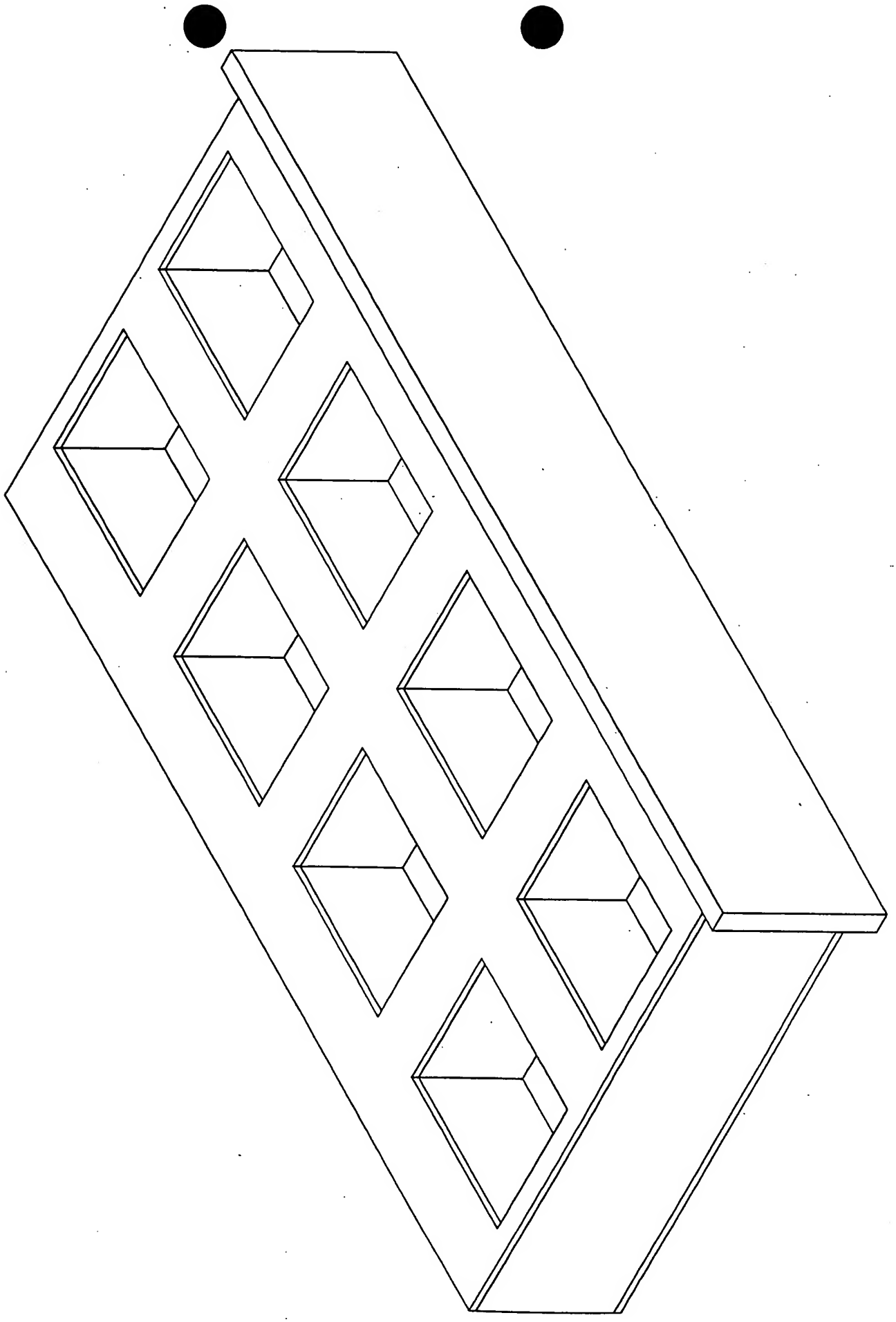
Drawing Size: D
DRAWN BY:
CHK'D BY:
APPR BY: BHM
PLOT SCALE: 50%
P/N:
REV: 1.A
DATE: 011602
SHT 1 OF 1

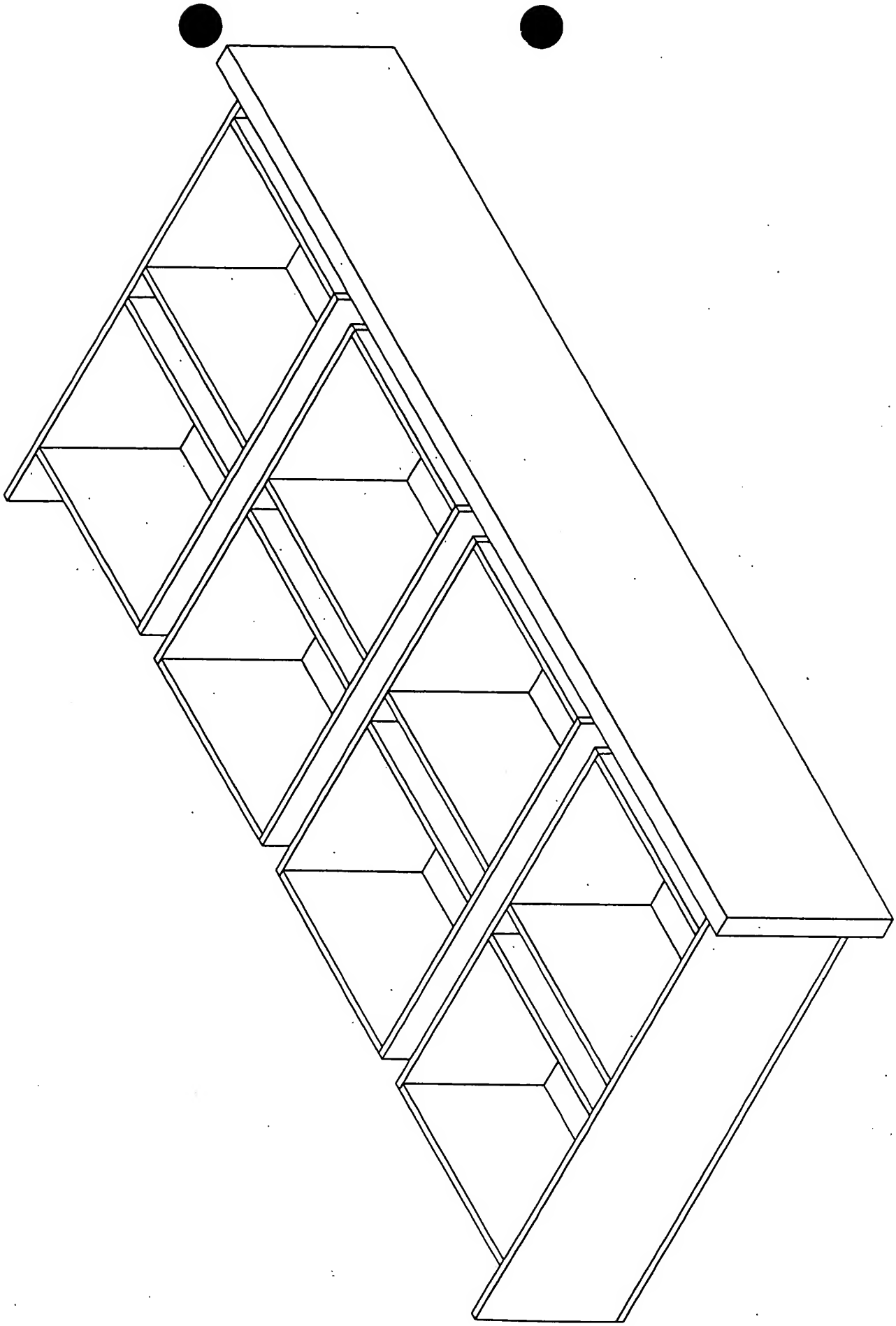






16/Brewer

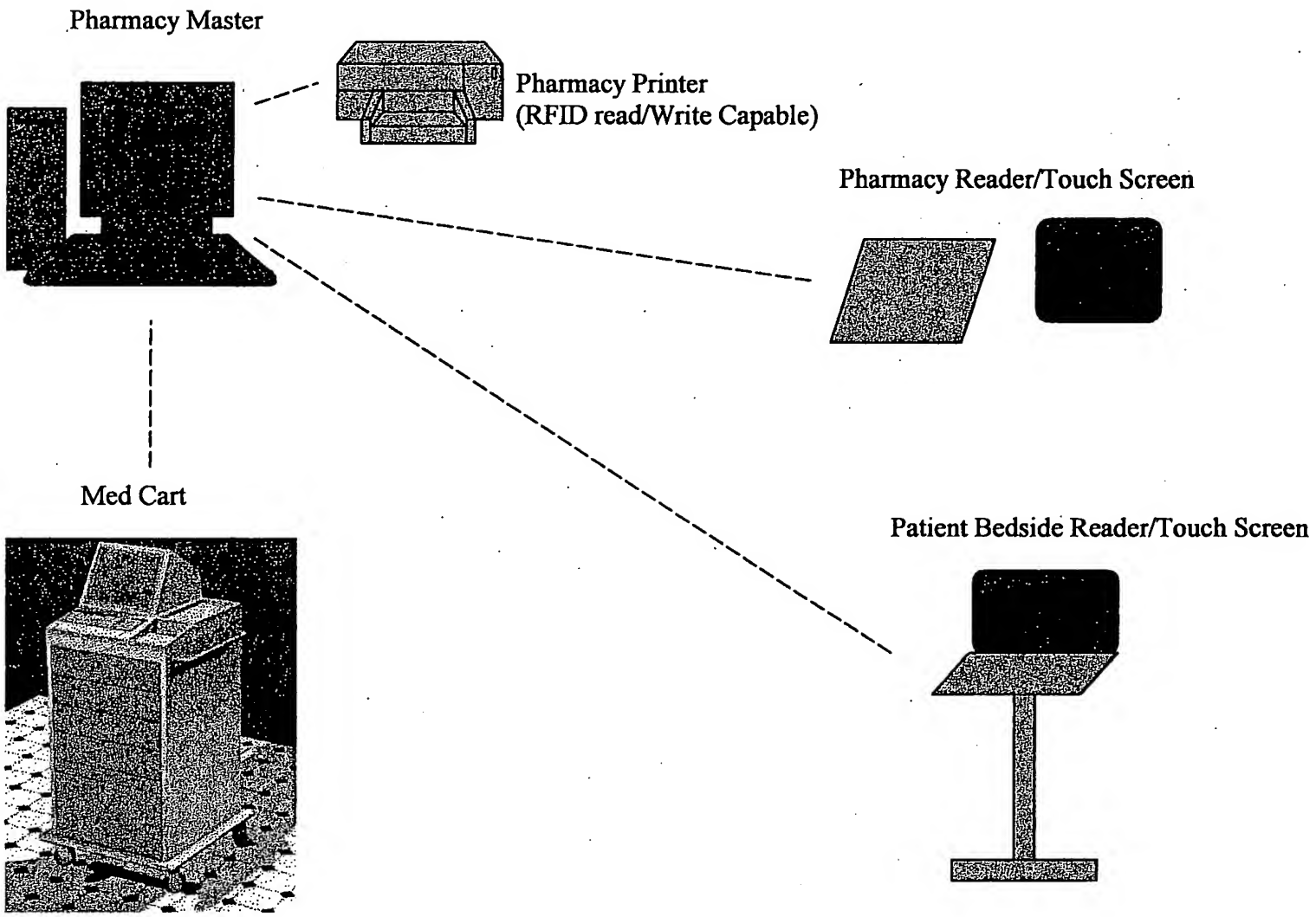




1/17/2002
J Caputo

SafetySyringes, Inc.

Medication Error System Concept



ESCORT MEMORY SYSTEMS
A DATALOGIC GROUP COMPANY

170 Technology Circle
Scotts Valley, CA 95066
Phone (831) 438-7000
Fax (831) 438-5768

PRICE QUOTATION revised 1/23/02

Customer:	Safety Syringes Inc.
Contact Name:	Jim Caputo
Address:	1939 Palomar Oaks Way, Suite A
Address:	
City, ST Zip:	Carlsbad, CA 92009
Fax:	760 918 9908
Phone:	760 918 0565

Quote Number	011206A
Quote Date	1/23/02
Expiration Date	2/17/02
Page Number	1

Part #	Description	Qty	List Price per unit	Disc.Price per unit	Ext. Price	Delivery
App 083 NRE	Med Cart Stage 1 - Proof of Concept Development. EMS will develop a proof of concept prototype to demonstrate the capabilities of a smart drawer antenna system capable of reading pharmaceuticals and medical supplies. A minimum of two compartments will be demonstrated with manual switching between the compartment antennas. SSI to provide samples of medical items to be tagged. Tag sizes to be approximately 13x33 but may very depending upon sample items submitted. This prototype will be limited to the antenna geometry and circuit design. No enclosure design is to be done at this stage. Upon successful completion of this task EMS will provide Stage 2 & 3.	1	$ 5,000.00	$ -	$ 5,000.00	COMPLETED and PAID
App 083 NRE	Med Cart Stage 2 - Design Implementation. EMS will implement the design concept developed in stage 1 and incorporate a multiplexer design that will allow a single controller to pole multiple antennas/drawers minimizing the number of controllers required for this product solution. Will subcontract the manufacturing of the cabinet to a compentent supplier and integrate the PC, I/O controls, Solenoids, Relays and RFID. SSI to provide PC and LCD per hardware specification. EMS to provide, 4 LRP820s, powers supply(s) Opto22 controls for PC control of drawer actuation via the PCI bus. This quote is being revised from the previous quote of 2 active drawers with 4 active compartments to 3 active drawers with 8 comparts each and a read/write station on the top desk surface of the med cart. NOTE: SSI is to provide all software required to access the RFID controllers, drawer openings, and database management. EMS to demosnstrate functional control over all features via software.	1	$ 47,000.00	$ -	$ 47,000.00	8 weeks from SSI approval to proceed.
App 083 NRE	Pharmacy Read Station LRP820 w/ custom antenna (similar to a single drawer compartment), power supply, and communication cables. SSI to provide computer and LCD display. Price is estimate only as this has not been clearly defined.	1	estimate only $7500	$ -	$ 7,500.00	4 weeks to be scheduled.
App 083 NRE	Bed Side Read Station LRP820 w/ custom antenna (similar to an LRP820-08) power supply, and communication cables. SSI to provide computer and LCD display.	1	$ 5,000.00	$ -	$ 5,000.00	3 weeks. To be scheduled
				Total	$ 64,500.00	

Terms: Stage 1: Net 30 days. Regardless of performance or SSI's to decision to proceed to stages 2 & 3.
Stage 2, Pharmacy Read Station and Bed Side Read Station require 50% payment prior to starting.

Quote by: Brian Monahan

ESCORT MEMORY SYSTEMS (EMS), is a world-wide leader in the industrial automation field, offering solutions based on Radio Frequency Identification Systems (RFID) & Network Interface Modules.

SafetySyringes, Inc.
1939 PALOMAR OAKS WAY, SUITE A, CARLSBAD, CA 92009
TEL 760.918.9908 • TOLL FREE 877.477.0776
FAX 760.918.0565 • www.safetysyringes.com
FED. ID.# 95-4305850

PURCHASE ORDER

P/O NUMBER	PAGE
100539-00	1

P/O DATE	ORDER TYPE	CHANGE/CANCEL
01/29/02	Normal	Change

ORDERED FROM:
ESCORT MEMORY SYSTEMS
170 TECHNOLOGY CIRCLE

SCOTTS VALLEY CA 95066

SHIP TO:
SAFETY SYRINGES, INC.
1939 PALOMAR OAKS WAY
SUITE A
CARLSBAD CA 92009

BUYER	TERMS	ACKNOWLEDGE	CONFIRM	FOB	SHIP VIA	COL/PPD
C ANDREASSON	NET 30 DAYS	No	No	N/A	N/A	

LINE UMBER	QUANTITY ORDERED BLANKET TYPE	U/M	ITEM NUMBER DESCRIPTION/COMMENTS	PRICE/UNIT	REQUESTED DATE	EXTENDED PRICE
1	1	EA	QUOTE 011206A-1 STAGE 1 - PROOF OF CONCEPT DEVELOPMENT	5,000.0000	12/21/	5,000.00
	1	EA	QUOTE 011206A STAGE 2 - DESIGN IMPLEMENTATION	47,000.0000	03/12/	47,000.00
3	1	EA	QUOTE 011206A Pharmacy Read Station Estimate Only	7,500.0000	01/29/	7,500.00
4	1	EA	QUOTE 011206A Bed Side Read Station Estimate Only	5,000.0000	01/29/	5,000.00

Total Ext Price = 64,500.00

COMMENTS:

FAXED 1-29-02

APPROVED BY [signature] DATE 1/29/02

January 25, 2002
Jim Caputo
Safety Syringes, Inc.

Med Error System (Demo)
Use Cases

Administration Computer (for the demo, could be performed on the pharmacy master station)

- **Clerk**
  - Logs into system
  - Enters patient information
    - Name
    - Address
    - Phone
    - Insurance information
    - Patient medical history
      - Allergies to drugs
      - Any historical medical information
  - Enters patient ID Number
  - Enters association of Patient ID # to RFID Tag #
  - Prints patient ID Card (RFID Tag)
  - Prepares billing
  - Reviews billing reports

Doctors Computer (for the demo, could be performed on the pharmacy master station)

- **Doctor**
  - Logs into system
  - Reviews patient information
  - Generates prescription for a patient
  - Forwards prescription to pharmacy
  - Reviews reports
    - Med Error reports
    - MAR reports

Pharmacy Master Station

- **Pharmacist**
  - Logs into system
  - Verifies prescriptions
  - Reviews prescription for patient's compatibility
  - Reviews prescriptions for other drug's compatibility
  - Approves prescription and releases to administer
  - Reviews reports
    - Drugs delivered

Inventory reconciliations
Med Errors reports
MAR reports
Billing reports
Drug retrieval errors
Reviews Med Cart inventories
Current inventory vs. inventory Minimums

Pharmacy Station Reader/Writer

Pharmacy Technician

Logs into system
Receives medical product and places into inventory
Scans drugs going to Med Cart
Re-supplies hospital floor Med Carts
Reviews Med Cart inventories
Current inventory vs. inventory Minimums

Med Station

Pharmacy Technician

Logs into system
Re-supplies medications to cart

Nurse

Logs into system
Selects patient from menu
Reviews patient prescriptions
Reviews current (MAR)
Drugs administered
Drugs to be administered
Selects current drugs to be delivered to patient
Retrieves drugs from Med Cart
Electronically associates drug with patient

Patient Station

Nurse

Logs into system
Scans patient card and drugs for Go/No Go delivery
Reviews Go/No Go readout
If Go administers drugs
Enters "Drugs Given" confirmation
If No Go verifies cause of error
Identifies/corrects error
Repeats from scan patient card and drugs operation
Enters patient medical notes as required (patient condition, etc)
Views patient prescriptions vs.MAR report (may print MAR report at nurses station)

Note: It is assumed that all product to be used for the demo has been pre tagged with RFID labels associated to a database with the following information:

- Manufacturer
- Part/Item Number
- Product Name/concentration
- NDC Code
- Expiration Date
- Lot Number

This can be accomplished at the pharmacy read/write station or via a Zebra printer/reader/writer.

O-PARTS O-TOOLS □-ASSEMBLY △-TEST / INSP
LEGEND LEGEND

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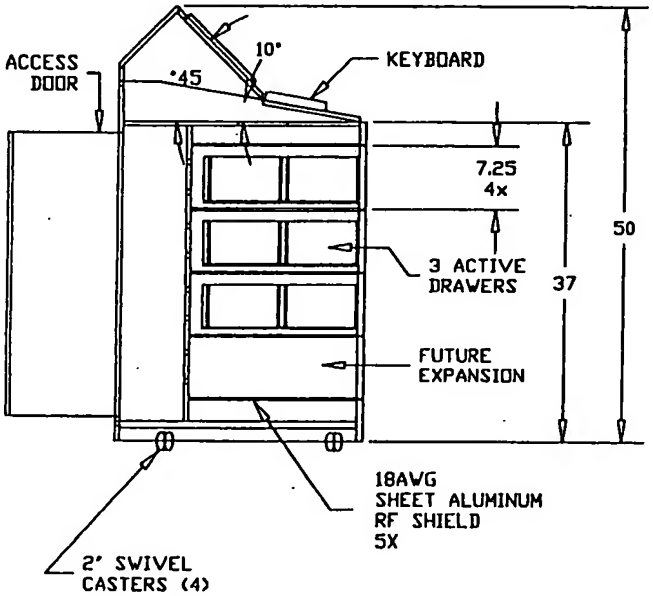
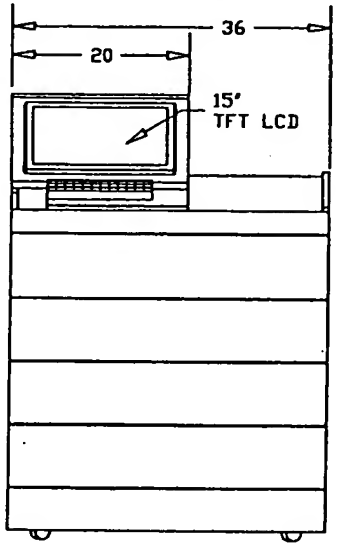
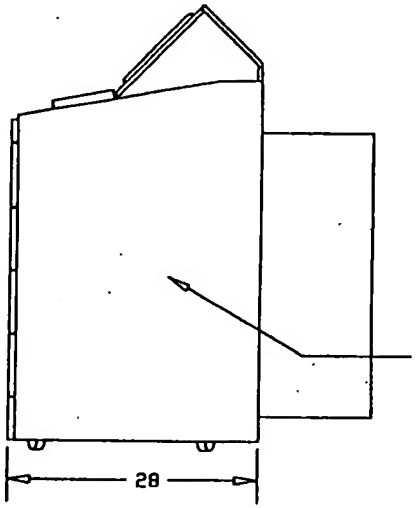
REVISIONS					
REV	ECO#	BY	DATE	CHANGE	APPR/DATE
1.D	-	BHM	020131	RELEASE FOR FABRICATION	JC (SSI) / 020131







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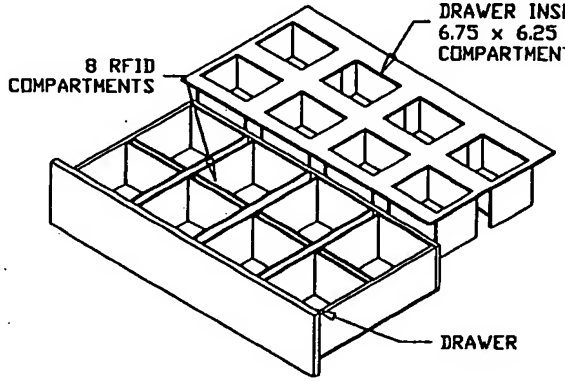
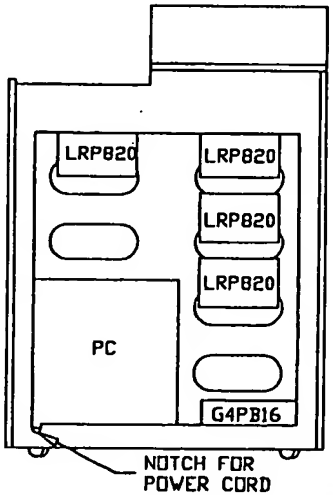
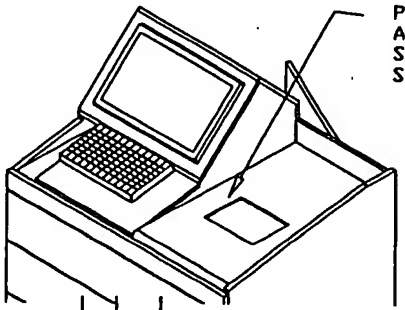






ITEM	QTY	PART DESCRIPTION	EMS P/N

TOLERANCES UNLESS SPECIFIED OTHERWISE ARE:
ANGLES
XX ±
.XXX ±

ESCORT MEMORY SYSTEMS
A DATALOGIC GROUP COMPANY

MED STATION WITH RFID SPECIFICATION DWG

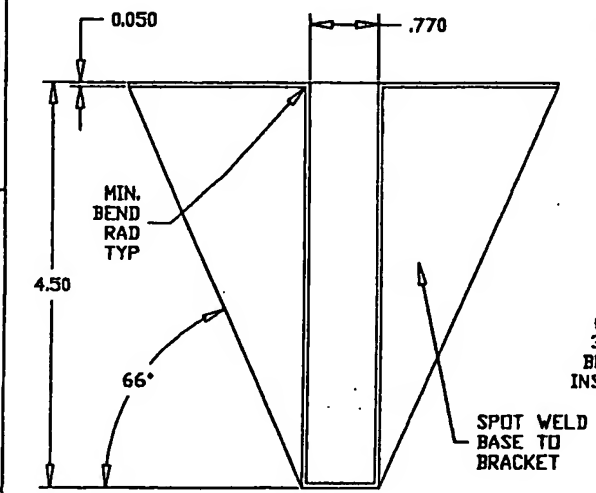
Drawing Size: B
DRAWN BY:
CHK'D BY:
APPR BY: BHM
PLOT SCALE: NONE
P/N:
REV: 1.D
DATE: 020131
SHT 1 OF 1

CONFIDENTIAL

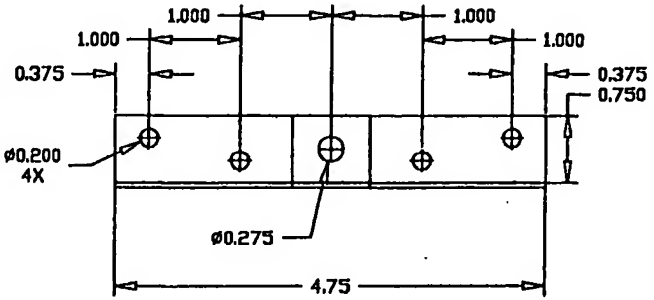
O-PARTS O-TOOLS □-ASSEMBLY △-TEST / INSP
LEGEND LEGEND

REVISIONS					
REV	ECO#	BY	DATE	CHANGE	APPR/DATE
1.C	-	BHM	020211	BRACKET WAS CRS. RELEASED FOR PROTOTYPE.	BHM/020211

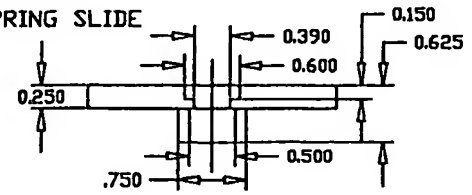
NOTES:
1) BREAK & DEBURR ALL SHARP EDGES.
2) MATERIAL: SPRING BRACKET = .050 STAINLESS STEEL.
SPRING GLIDE = S.S. (303 or 304) GROUND FOR 3/8" BEARING. SPRING NUT = S.S. (303 or 304)
SLIDE = 6061 ALUMINUM, BEARING PROVIDED BY EMS.
3) SPRING AND HARDWARE PROVIDED BY EMS.

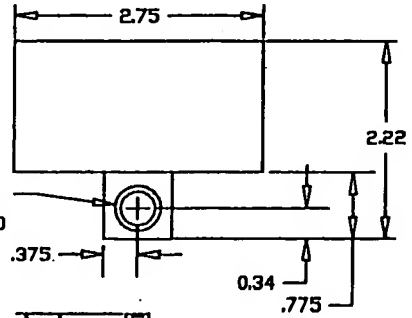


SPRING BRACKET



SPRING SLIDE





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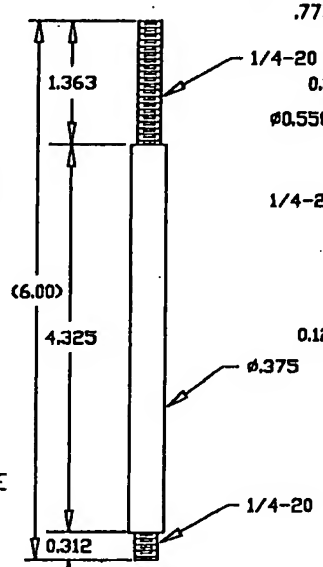
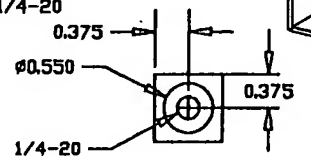
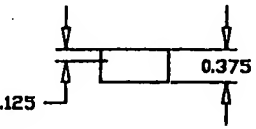
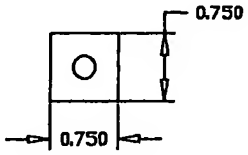
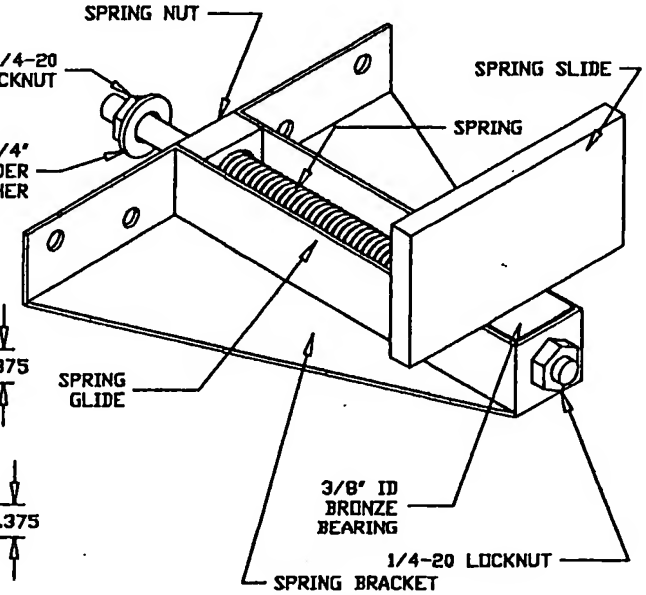








SPRING NUT



ITEM	QTY	PART DESCRIPTION	EMS P/N

TOLERANCES UNLESS SPECIFIED OTHERWISE ARE:
ANGLES ±1/2°
.XX ± .01
.XXX ± .005

RICOR MICROCOOL SYSTEMS
A RICOR GROUP COMPANY

APPLICATION 083,SUB-ASSY
DRAWER SLIDE SPRING

Drawing Size	DRAWN BY:	CHK'D BY:	APPR BY:	PLOT SCALE: 50%	P/N: TBD	REV: 1.C	DATE: 020211	SHT 1 OF 1
B	BHM		BHM					

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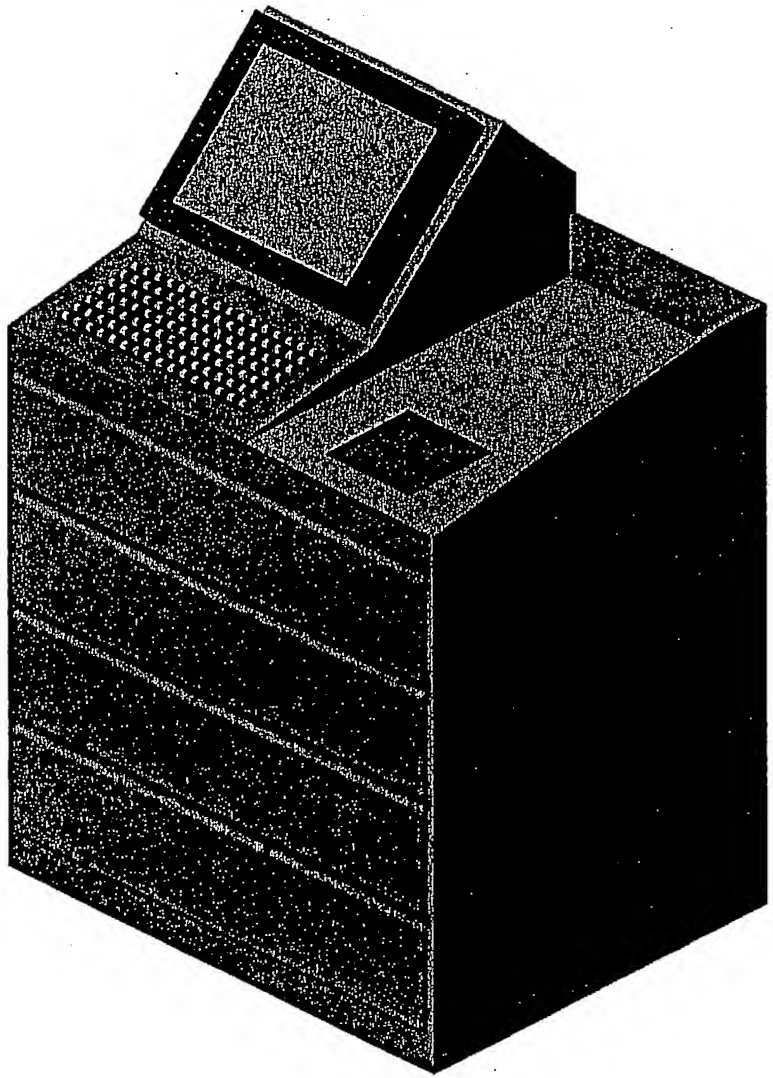
SafetySyringes, Inc.™
02/15/02

MEPS Dispensing Station



CONFIDENTIAL

UltraSafe
PRODUCTS & SERVICES

SafetySyringes, Inc.™

Board of Directors Meeting

February 19, 2002

Business Development – RFID Med Error System

Jim Caputo

CONFIDENTIAL

UltraSafe®
PRODUCTS & SERVICES

SafetySyringes, Inc.™

SSI MED ERROR PREVENTION SYSTEM
"MEPS"

Pharmacy

Reports
Prescriptions
Prescription Errors
Inventory Control Reports

Plate/Tunnel Scanner

Supply To Cart

Returns to Pharmacy

MEPS Dispensing Station

Reports
Inventory Control (Min/Max)
Lot/Date Code Control

Un-Used Drugs from Bedside Returned to Cart

Drugs To Patient Station

Patient Bedside

Reports
Patient/Drug Report
Nurses "MAR" Report
Med Error Report
Patient Billing
Nurse/Drug Report

CONFIDENTIAL

Project Status

- Software development – Nextwerk
  - Design framework complete (interface with EMS hardware)
  - Developing "use cases" detail
  - Developing database systems

- Hardware – Escort Memory Systems (EMS)
  - Dispensing station approved and in fabrication
    - Drawer completed 02/14/02
  - Patient station – basic design complete
  - Pharmacy station – to be developed

- Agreements
  - Nextwerk – LOI signed
  - EMS – Final revision in process
    - Target completion date 03/01/02

Demo System Cost Projection

• Med Cart RFID Development & Fabrication	$ 52,000
• Nextwerk Software Development	$ 28,500
• Hardware (computers and touch-screens)	
– Pharmacy Master	$ 2,500
– Pharmacy Read/Write	$ 1,710
– Dispensing Station	$ 3,325
– Patient Station	$ 2,290
• Patient Station RFID & Fabrication	$ 7,500
• Pharmacy Station RFID & Fabrication	$ 5,000
• Contingency	$ 20,000
TOTAL	$122,825

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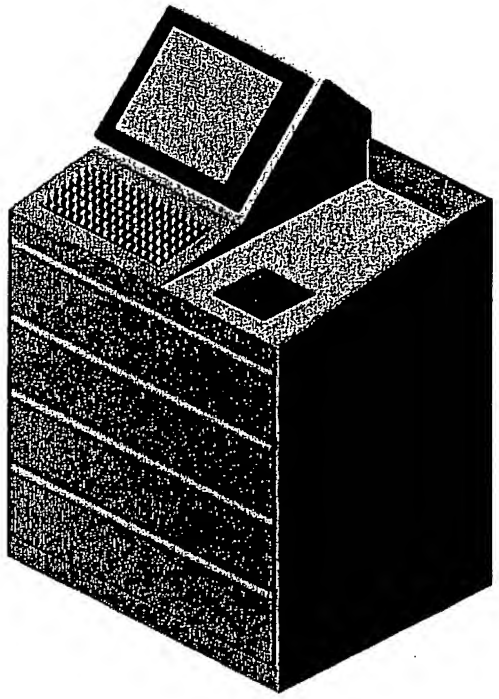
UltraSafe
PRODUCTS & SERVICES

SafetySyringes, Inc.

SafetySyringes, Inc.
02/15/02

MEPS Dispensing Station



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Objectives for Remainder of FY02 and First Half of FY03

- Develop MEPS marketing strategy utilizing demo system as a springboard technology
  - Identify Initial Market Focus
    - Medication Error Driven
      - Controlled Substances
      - Chemo Therapy Drugs
      - Blood Products
    - Process Control Driven
      - Surgical Instruments/Sterilization
      - Hospital instrumentation/Location and maintenance
  - Develop strategic relationships
    - GPO's
      - Premier, Novation
    - Government agencies
      - FDA, CDC, OSHA
    - Medication Error Organizations—ISMP, Institute for safe Medication Practices
    - Pharmaceutical Companies
- Beta Site Testing
  - Identify 2 Beta Sites by 05/30/02
- Develop 2nd generation product based on user and beta site testing
- Develop Business Plan

SSI MEPS

System Requirements

Meeting held 02/25/02
Shariq
Mubashir
Jim
on use case tests/definitions
See mark-ups

Prepared By Mubashir A. Mian
Version 1.1 February 22, 2002
Confidential

CONFIDENTIAL

REVISION HISTORY

DATE	REVISION	DESCRIPTION	AUTHOR
February 22, 2002	1.1	Completed basic use cases	Mubashir A. Mian
February 17, 2002	1.0	First Cut – lots of details need to be added. Need help from Shariq/Jim on Section 4.	Mubashir A. Mian

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1. Introduction

This purpose of this document is to define and explain the Specifications of the MEPS2000 system. Software development on the system will be based on an approved copy of this document.

1.1 Glossary of Terms

AREA	Explanation
RFID TECHNOLOGY	
LRP	The LRP reader module. It will be embedded in various devices that we will use.
INVENTORY	
Tagged Inventory	This means medicines that come in through receiving and they are already RFID tagged.
Un-tagged Inventory	This means medicines coming into the system which do not have RFID tags on them.
Drug Mix	This mix is created by the Pharmacist in a hospital. Sometimes hospitals buy drugs in large quantities. Based on a doctor prescription, the pharmacist will take little quantities of tablets etc and put them in a little plastic bag. This is the drug mix. This mix is always specific to a customer and his prescription.
RF Tagged bag	These are empty PVC pouches which already have an RFID sticker attached. This is for demo only. In the real environment, we will probably use a regular printer which will ink print RF Tags.
REPORTING	
MARS	Medical Administration Report.
MER	Medical Error Report

1.2 Intended Audience

The intended audience for this document is Messrs Jim Caputo and Shariq Hussain on behalf of SSI, Mubashir Mian and a development team on behalf of NEXTWERK.

This document serves two purposes. Initially we will use it as a working document between SSI and NEXTWERK to finalize our mutual understanding of the project and implementation scope. Once SSI has signed off on the document, this will be used by NEXTWERK developers as a basis for software development.

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2. System Features

These are some features that cannot be explained by use cases. These features need to be implemented.

2.1 Pharmacy

We have to incorporate the prescription review process and show that prescriptions have been released.

2.2 Dispenser

On Returning Drugs to Dispenser, Nurse should be able to annotate why she is returning drugs.

- Alarms Management:
  - The ability to reset alarms.
  - The ability to see different alarms and when they occurred.

2.3 Bedside Station

3. System Modules

The system consists of the following modules.

Name	Runs on
Patient Module	PC only
Inventory Module	PC only
Alarms Module	PC only
Prescription Module	PC only (can be combined with Patient)
Medcart Main Module	Medcart only
Bedside Main Module	Bedside only
MARS / MERS reporting	PC, Medcart and Bedside

4. System Use Cases

4.1 Patient Module

Actor	#	Flow	Use Case
Any	1	PRI	Admit Patient
	2	PRI	Find / Browse Patients

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	3	PRI	Edit / Modify Patient Record
	4	PRI	Discharge Patient
	5	PRI	Display Patient Invoices

4.2 Pharmacy Station Inventory Module

Actor	#	Flow	Use Case
Any	1	PRI	Add untagged inventory to the inventory
	2	PRI	Add pre tagged inventory
	3	PRI	Add custom drug mix to the inventory
	4	PRI	Review Inventory on Hand
	5	PRI	Get a restocking notification from the dispenser MIN/MAX
	6	PRI	Get an alarm from the dispenser
	7	PRI	Dispatch Drugs to Medcart
	8	PRI	Run Inventory Checks [Various Reports]
	9	PRI	Return inventory from Dispenser
	10	PRI	Write Off unused / destroyed inventory

4.3 Pharmacy Station Prescription Module

Actor	#	Flow	Use Case
	1	PRI	Review New Prescriptions
	2	PRI	Approve New Prescription
	3	PRI	Reject New Prescription
	4	PRI	Modify Doctor's Prescription

4.4 Dispenser [MEDCART]

Actor	#	Flow	Use Case
Any	1	PRI	Login
Nurse	2	PRI	Review Her Patients
	3	PRI	Retrieve Drugs for Patient X.
	4	PRI	Return Drugs.
	5	PRI	Review MARS
Technician	6	PRI	Load inventory into Dispenser
	7	PRI	Retrieve Returned Drugs from 'Return Drawer.'
Doctor	8	PRI	Review Patient MARS
	9	PRI	Review approved prescriptions for a patient
	10	PRI	Browse patients
	11	PRI	Find a patient

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4.5 Bedside Station

Actor	#	Flow	Use Case
Any	1	PRI	Administer Drug
	1a	EXC	Not Administer Drug

5. Concepts and Business Rules in the Customer Domain

These concepts are not a part of the project specification. These are provided so that all parties on the project work from the same set of assumptions. This portion to be provided by SSI.

5.1.1 Patient and Admission

/**********/

5.1.2 How patients are admitted in hospitals – General Overview

/**********/

5.1.3 How patients are billed for hospital services

/**********/

5.2 Admitted Patients

5.2.1 How a prescription is created

/**********/
/**********/

5.2.2 Prescription Lifecycle (Start to Finish)

/**********/
/**********/

5.2.3 How the nurses make sure today that patients are getting their medicines

/**********/
/**********/

5.2.4 What usually goes wrong with drug administration

/**********/
/**********/

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5.3 In the Pharmacy:

5.3.1 The utility of the Pharmacy in the hospital

/**********/
/**********/

5.3.2 How drugs usually arrive today

/**********/
/**********/

5.3.3 How drugs will arrive after MEPS

/**********/
/**********/

6. Design Concepts for the Solution Domain

This section is to be used as the primary aid in designing the software. These concepts and ideas are put together by the NEXTWERK team in San Diego. The purpose of explaining them here is to amplify some key areas of the solution domain.

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7. USE CASES DETAIL

7.1 Patient Module

Use Case Number	UC-1
NAME	Admit Patient
ACTORS	Any
GOAL IN CONTEXT	Start a new patient record.
PRE-CONDITION	Successful Login
POST-CONDITION	Patient record in our system is successfully initialized
UC DESCRIPTION	▫ The operator starts the Patient Module ▫ Fills out the patient form ▫ Fills out other details [allergies etc] ▫ Confirms to admit ▫ Patient is admitted
SCENARIOS	Patient already exists Key information is missing on the form
NOTE	

Use Case Number	UC-2
NAME	Find / Browse Patients
ACTORS	Any
GOAL IN CONTEXT	Looking for the right patient
PRE-CONDITION	Successful Login
POST-CONDITION	
UC DESCRIPTION	▫ When Browsing: o The operator can browse the information by Date or By alphabet. o The system will show a list of all records in the system. ▫ When Finding: o The operator will key in search criteria. The system will return a list of Patients whose names are identical to the alphabets keyed.
SCENARIOS	No patient record.
NOTE	

Use Case Number	UC-3
NAME	Edit / Modify Patient Record
ACTORS	Any

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GOAL IN CONTEXT	Correct an entry
PRE-CONDITION	Successful Login
POST-CONDITION	
UC DESCRIPTION	❑ The operator finds the patient to edit. ❑ The operator puts the form in edit mode. [Button.] ❑ Makes the change in the desired field. ❑ Saves and confirms the operation. [Confirm dialog box.]
SCENARIOS	
NOTE	Need to go over the PK for a patient record. Also, it would be great to find how the real hospitals deal with change in records and what can they change after admitting. For the demo version, we will use a simplified use case. In the production version, a lot of checks need to go into place before a patient record can be modified. Also, in the production release, we'll have to run an audit trail of modifications.

Use Case Number	UC-4
NAME	Discharge Patient
ACTORS	Any
GOAL IN CONTEXT	Get Patient record de-activated in our system. For the demo, the purpose of this step is also to show that on discharge, the invoice information is correctly handled.
PRE-CONDITION	Successful Login
POST-CONDITION	
UC DESCRIPTION	❑ The operator goes to the 'Discharge Screen.' ❑ The screen guides the operator through the steps of the discharge process. ❑ On pressing [Confirm Discharge Button] the system will discharge the patient from the system.
SCENARIOS	
NOTE	We should get a discharge checklist from a real hospital. Need to find out what the real discharge procedure is and just mimic it.

Use Case Number	UC-5
NAME	Display Patient Invoices
ACTORS	Any
GOAL IN CONTEXT	Reporting
PRE-CONDITION	Successful Login
POST-CONDITION	

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UC DESCRIPTION	This is a use case for a reporting feature. The operator goes to the relevant screen and requests invoice records for a particular patient.
SCENARIOS	
NOTE	Need to ensure that Invoices for discharged patients are also available on the system.

7.2 Pharmacy Station Inventory Module Use Cases

Use Case Number	UC1
NAME	Add untagged drugs to the inventory
ACTORS	Pharmacist / Technician
GOAL IN CONTEXT	Inventory Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	❑ A box of drugs shows up. ❑ The tech opens the box and takes out individual tablets or syringes. ❑ He puts syringes in plastic bags. Each bag has an RFID tag on it. ❑ Then the tech goes to the Add Inventory window and presses the Add-Untagged button. ❑ The system brings up a form. ❑ The tech fills out basic information ❑ The system brings up a dialog box and asks the tech to bring the bag in front of the RF Antenna. ❑ At this time the system reads the tag and associates it with the drug as input on the form. ❑ The system confirms that the drug has been added.
SCENARIOS	
NOTE	For the demo, the following questions need to be answered: ❑ When adding inventory, what would we typically add in front of the demo customers. ❑ Are we going to deal with upkeep of untagged inventory? I mean should we keep track of incoming drugs whether they are tagged or not?

Use Case Number	UC-2
NAME	Add pre tagged inventory
ACTORS	Pharmacist / Technician
GOAL IN CONTEXT	Inventory management
PRE-CONDITION	
POST-CONDITION	

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UC DESCRIPTION	❑ A box of drugs shows up. ❑ The tech brings up the 'Add tagged inventory' window. ❑ The system scans the tag. ❑ {if a manifest is provided, the system will find the name of the drug automatically from the manifest. That is probably not going to happen in the demo.} ❑ If the manifest is not provided, the tech will type in the name of the drug. ❑ The system confirms that the drug has been added.
SCENARIOS	Adding pre tagged drugs without a manifest. Adding pre tagged with a manifest
NOTE	If we are to add with manifest, then a manifest format should be defined now.

Use Case Number	UC-3
NAME	Add custom Drug Mix
ACTORS	Pharmacist / Technician
GOAL IN CONTEXT	Inventory Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	This usually happens when the Pharmacist takes small quantities from bulk storage and puts together a custom mix according to a prescription. ❑ Pharmacist takes an empty RF tagged bag. ❑ Draws some drugs from jars etc and puts them in the bag. ❑ Brings up the 'Custom Mix' window on the system. ❑ Here, the Pharmacist types in names and quantities of what he added to the bag. ❑ Then he chooses a customer and a prescription from a choice-list and associates it with the bag. ❑ He saves the form and system confirms that a custom mix has been added to the inventory.
SCENARIOS	
NOTE	At the time of mixing do we need to associate this particular tag to a customer?

Use Case Number	UC-5
NAME	Get a restocking notification from a MEPS device
ACTORS	Any
GOAL IN CONTEXT	Inventory Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	A restocking alarm program will always be running on select machines. It will run in the system tray. The same will also be available inside the

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	inventory application. So basically there are two ways of getting the restocking requests. This use case defines the most likely i.e. via system alarm. ❑ The tech will notice a popup alarm on the Pharmacy PC. ❑ On pressing the OK button, a window will open up which will show the level of inventory in a specific MEPS cart. ❑ After reading this information, the tech will dismiss the alarm thru a button. ❑ The system will understand that the tech knows about the restocking request. ❑ The tech will take appropriate action.
SCENARIOS	What if the alarm goes off and the tech dismisses it but does nothing. Should there be a timeout?
NOTE	

Use Case Number	UC-6
NAME	Get alarm from a MEPS device
ACTORS	Any
GOAL IN CONTEXT	Exceptions Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	Alarms on PCs will be implemented in popup windows. An alarm manager module will be running on every PC in the system. ❑ The tech will see a popup window flashing on the screen. ❑ He will read the alarm and dismiss it. ❑ The system assumes that an alarm condition has been safely conveyed to the right party. ❑ The system will wait for the alarm to be reset on Medcart.
SCENARIOS	
NOTE	Later, we can add a feature that a user can remotely reset alarms on any Medcart in the system.

Use Case Number	UC-7
NAME	Dispatch drugs to Medcart
ACTORS	Any
GOAL IN CONTEXT	Inventory management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	This is basically an inventory displacement. A tagged inventory is moving from one location to another. ❑ The tech brings up the 'Move inventory' window.

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	☐ The system will confirm the quantities and names of drugs that are being returned. ☐ The system will confirm that the status and location of these drugs has changed successfully.
SCENARIOS	
NOTE	

Use Case Number	UC-10
NAME	Write Off Unused / Destroyed Inventory or return to Inventory
ACTORS	Any
GOAL IN CONTEXT	Inventory Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	This usually happens when the technician wants to return unused inventory back to the pharmacy. Here I am assuming unused also means unusable. ☐ The technician brings up the return inventory window. ☐ Now the technician scans the drugs. ☐ The system confirms that these drugs are to removed from the inventory. ☐ Now the system deletes these drugs from the inventory.
SCENARIOS	
NOTE	Should we differentiate between unused and destroyed for the purpose of the demo?

7.3 Pharmacy Station Prescription Module

Use Case Number	UC-1
NAME	Review new prescription
ACTORS	Pharmacist
GOAL IN CONTEXT	Prescriptions Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	New prescriptions can be added to the system from many places. The pharmacist needs a convenient way of finding out what needs to be filled. ☐ The pharmacist opens the 'New Prescription Requests' window. ☐ The window opens up and shows all new and unfilled prescriptions. ☐ The pharmacist chooses the first one he wants to fill. ☐ Now for this prescription: ☐ He figures out if it is OK to fill the prescription as is. (In order to

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	approve.) ❑ Takes an empty RFID bag. ❑ Puts the prescribed drugs into the bag. ❑ Associates the bag to a particular prescription. ❑ Confirms. This action automatically approves the prescription while filling.
SCENARIOS	
NOTE	

Use Case Number	UC-2
NAME	Approve Prescription (see above)
ACTORS	Pharmacist
GOAL IN CONTEXT	Prescriptions Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	This is an extension of the above use case. The pharmacist will review a prescription and as soon as a prescription is reviewed, it will be implicitly approved.
SCENARIOS	
NOTE	

Use Case Number	UC-3
NAME	Reject Prescription
ACTORS	Pharmacist
GOAL IN CONTEXT	Prescription Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	❑ The pharmacist opens the 'New Prescription Requests' window. ❑ The window opens up and shows all new and unfilled prescriptions. ❑ The pharmacist chooses the first one he wants to fill. ❑ If there is a problem with this prescription, the pharmacist presses the 'reject' button. ❑ Now the prescription is marked as rejected. At this point, the doctor will have to provide a different prescription.
SCENARIOS	
NOTE	

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Use Case Number	UC-4
NAME	Modify Doctor Prescription
ACTORS	Pharmacist
GOAL IN CONTEXT	
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	◻ The pharmacist opens the 'New Prescription Requests' window. ◻ The window opens up and shows all new and unfilled prescriptions. ◻ The pharmacist chooses the first one he wants to fill. ◻ If there is a problem with this prescription, the pharmacist selects the 'Modify Prescription' option from the window. ◻ Now he can modify the prescription to the way he sees fit.
SCENARIOS	
NOTE	

7.4 Dispenser Use Cases

Use Case Number	UC-1
NAME	Login
ACTORS	Any
GOAL IN CONTEXT	Authentication
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	◻ A user walks up to the Medcart ◻ If there are no alarms, the normal login window is floating on the screen. ◻ The user touches the login button ◻ The system comes back fields for ~~username~~ ~~and~~ password ◻ {a keyboard appears on the touch screen.} ◻ The user enters the information
SCENARIOS	Failed login Bad account
NOTE	

Use Case Number	UC-2
NAME	Review Patients
ACTORS	Nurse
GOAL IN CONTEXT	Routine nursing operation
PRE-CONDITION	

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POST-CONDITION	
UC DESCRIPTION	This use case comes in play when the nurse is taking her rounds and wants to see what she needs to do [drug admin] for the patients. While doing these rounds, she will need an easy interface to see what drugs are due to which patients. ❑ Nurse walks up to the Medcart ❑ Chooses the Patient review button ❑ From available choices, she chooses Patient review. ❑ Now she has a list of patients. ❑ She chooses the one she is interested in. ❑ A new window pops up which shows what drugs have been given to the patient at what times. Also, what is due (according to the prescription.)
SCENARIOS	
NOTE	For the demo all patients belong to the nurse account. Need to talk to Jim and figure out how we will enter the prescriptions into the system so that a delivery schedule can be established in the database.

Use Case Number	UC-3
NAME	Retrieve Drugs for Patient X
ACTORS	Nurse
GOAL IN CONTEXT	Drug Administration
PRE-CONDITION	The nurse knows she needs to give a drug to a patient
POST-CONDITION	
UC DESCRIPTION	The nurse walks up to the Medcart and does her review. Here she figures that Patient X needs his drug. So she chooses the 'Retrieve Drug' option on the touch screen. ❑ Nurse chooses the right patient. ❑ Chooses the option that she wants to retrieve drugs for this patient. ❑ The system knows where the prescription is (in which pocket in which drawer.) The system ejects the right drawer and graphically shows on the screen where to get the drug from. ❑ The drawer opens up. ❑ The nurse retrieves the pouch. ❑ After taking the drug pouch she presses the drawer to close it. ❑ As soon as the drawer closes, the system runs a check on inventory and confirms that indeed she took the right drug pouch out of the drawers. ❑ The nurse walks away with the pouch and the system adjusts the inventory. [Sets it in the transit->to bedside status.] Show location with graphics
SCENARIOS	Nurse takes the wrong medicine from the drawer. Nurse takes nothing out. Nurse takes out the right drug and then some more.
NOTE	

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Use Case Number	UC-4
NAME	Return Drugs
ACTORS	Nurse
GOAL IN CONTEXT	Drug Administration
PRE-CONDITION	Drug has been retrieved from the Medcart but not administered for some reason. Now she wants to return it.
POST-CONDITION	
UC DESCRIPTION	❑ Nurse walks up to the Medcart with some drugs. These drugs need to be returned. ❑ She chooses the 'Return Drugs' option. ❑ The system opens the return drawer (the second drawer) and shows her a popup which tells her that she should place the drugs in the drawer. ❑ The nurse puts the return pouch in the drawer. ❑ Manually closes the drawer. ❑ The system recognizes the closure and registers the return. ❑ Now a window pops up which gives the nurse, an option to explain why she is returning the drug. ❑ The nurse can choose a comment from selection or write a new one. ❑ She closes the popup window. ❑ The system confirms the return
SCENARIOS	
NOTE	

Use Case Number	UC-5
NAME	Review MARS
ACTORS	Nurse / Doctor
GOAL IN CONTEXT	Drug Administration
PRE-CONDITION	Nurse / Doctor is logged in.
POST-CONDITION	
UC DESCRIPTION	❑ The user chooses the MARS option on the touch screen. ❑ Chooses the patient either from the list. ❑ A screen report shows up which shows what this patient has received.
SCENARIOS	
NOTE	The report should be categorized and organized by: Today YTD This week Yesterday etc ???

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Use Case Number	UC-6
NAME	Load Inventory Into Dispenser
ACTORS	Technician
GOAL IN CONTEXT	Inventory Management
PRE-CONDITION	Some drugs were taken out of the pharmacy inventory and their status has been set to transit->Medcart-X.
POST-CONDITION	
UC DESCRIPTION	❑ Technician logs in and chooses inventory option ❑ From the inventory option, he chooses reload option. ❑ When he chooses reload, the Medcart automatically pulls up what its expecting [Jim, is that how it should be?] ❑ The main drawer pops open ❑ Technician loads drugs into pockets. ❑ Technician manually closes the drawer. ❑ The system checks incoming inventory and confirms on screen. ❑ The system sets its internal inventory count.
SCENARIOS	
NOTE	

Use Case Number	UC-7
NAME	Retrieve Returned Drugs from the 'Return Drawer'
ACTORS	Technician
GOAL IN CONTEXT	Inventory Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	❑ Technician logs in and chooses inventory option ❑ From the inventory option, he chooses 'return' option. ❑ The return drawer pops open. ❑ He removes all drugs from the drawer and closes it manually. ❑ The system recognizes that the drugs are gone and adjusts inventory. ❑ The inventory status is correctly marked at this time [Transit->return to pharmacy] ❑ A pop up confirmation message is displayed. It shows what was just retrieved. ❑ The technician confirms and then walks away.
SCENARIOS	
NOTE	

Use Case Number	UC-8
NAME	Review Patient MARS

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ACTORS	Doctor
GOAL IN CONTEXT	Patient Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	This is same as UC-4 above.
SCENARIOS	
NOTE	

Use Case Number	UC-9
NAME	Review Approved Prescriptions for a Patient
ACTORS	Doctor
GOAL IN CONTEXT	Patient Management
PRE-CONDITION	Doctor is logged in.
POST-CONDITION	
UC DESCRIPTION	This is a general feature use case. □ The Doctor chooses the patient option □ He selects the patient he is interested in. □ He chooses the review approved prescriptions option. □ Here he sees approved prescriptions for the patient.
SCENARIOS	
NOTE	

Use Case Number	UC-10
NAME	Browse Patients
ACTORS	Nurse / Doctor
GOAL IN CONTEXT	Patient Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	This is a general use case. A user comes and logs in to the system. He chooses the browse option. Here he can browse patient records without actually typing a key.
SCENARIOS	
NOTE	

Use Case Number	UC-11

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NAME	Find a patient
ACTORS	Nurse / Doctor
GOAL IN CONTEXT	Patient Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	This is a general use case. A user comes and logs in to the system. He chooses the Find option. Now he uses the virtual keyboard on the screen to enter search criteria. The system searches patient records and returns a list of patients who loosely match the search criteria.
SCENARIOS	
NOTE	

7.5 Bedside Station Use Cases

Use Case Number	UC-1
NAME	Administer Drug
ACTORS	Nurse / Doctor
GOAL IN CONTEXT	Drug Administration
PRE-CONDITION	A drug pouch has been retrieved from the Medcart (for a certain patient.) The status of this pouch is Transit->to patient
POST-CONDITION	
UC DESCRIPTION	+ Patient card ☐ Nurse walks up to the patient bedside. ☐ Here she logs into the bedside station ☐ Chooses 'Administer Drug' option. ☐ Waves the morphine injection in front of the scanner ☐ The system registers that the drug is going to patient X. ☐ Nurse injects the patient. ☐ The bedside station has a pop up confirmation window which asks if the drug was administered. ☐ She chooses the 'yes' option. ☐ The system confirms drug administration and sets the inventory etc.
SCENARIOS	Nurse comes to wrong patient Nurse did not administer drug Drug destroyed
NOTE	Is our assumption correct that each patient in a hospital will get one bedside station (I mean the ratio will be 1:1?)

Use Case Number	UC-1a
NAME	Administer drug exception
ACTORS	Nurse/Doctor

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"Jim Caputo" <caputoj@sbcglobal.net>

To: candreasson
Subject: Weekly Report 01/7 -01/11

01/12/2002 11:57 AM

---

o Finalized time line with EMS/Shariq (See attached)

o Finalized EMS definitive agreement and passed on the information to Sanjeev. Sanjeev will address the items we discussed and incorporate into the final version and email it to me this weekend. Based upon the IK situation, Sanjeev has some wording he would like to see in the exclusivity section. It all made sense and hopefully we can get it through EMS review.

o Receive and processed Dave Cobb's last invoice for Dec 2001. He will forward all materials to us and send an expense report for such. Kathleen has the approve invoice from me to pay on next check run.

o Connected Shariq and Brian via conference call to get further definition of the hardware/software interfaces. Based upon the emails copied to me, they are making progress on the needs between the two areas.

o Mubashir is to be arriving in San Diego on Saturday. Shariq will schedule a meeting with him and us at SSI on Monday to see a demo of the system. We may need to let him take back the demo unit to work on the interfaces with the software. He already has the EMS provided communication system (active X controls) to work on. He is also to sign the final Nextwork LOI (binding document). If this is acceptable to him, we may not need to have definitive agreement as the LOI would suffice. To be discussed.

o Concept drawings were generated by Brian with the details of the system. The overall system will not exceed 42" tall (plus screen height) and 36" wide by 24" deep. It will include six 6" drawers and one 12" drawer front. Only 3 of the 6" drawers will be "powered".

o Finished first draft of the screens spec to be used at each station. We have settled on four stations: (See attached concept chart)

Pharmacy Master (with printer)
Pharmacy read station
Med Station
Patient Read Station

Mubashir's group will propose ideas on the individual schemes for each of the specified activities. (Shariq said this was their specialty and that we would be pleased with the results. We will hard copy each screen and add this to the specs.

Next week:

o Meet with Mobashir
o Meet with Brian of EMS at SSI (not firmed up as of yet)
o Get cost schedule for entire project (behind schedule on this; this was supposed to be ready by yesterday. I have a preliminary but it does not include the patient station or the Pharmacy read station)
o Prepare for Board Meeting if it is to be held next week.
o Finalize drawing detail with Brian.
o Forward EMS definitive agreement to Mark for review and begin the discussions of the details

"Jim Caputo" <caputoj@sbcglobal.net>

01/19/2002 03:32 PM

To: candreasson
Subject: weekly report

---

o Met with Brian of EMS Thursday
Meeting minutes and updated schedule sent out on Friday. I sent them from SSI, so let me know if you didn't get them for some reason. Has all the action items we discussed. Already heard back from Brian with no additions.

o Found the files on Dave's computer. Assume Gray Cary will handle from here.

o Key schedule Items
Med station sign off next week
Release Elements 2001 on fabrication (after samples of their work and finishes have been reviewed.

Next Week

o Meeting with Brian and Elements 2001 (both Shariq and I)

o Schedule review with Mubashir on software integration

Christer,

Thanks for your kind words. Great lunch. I think it is good to let loose now and again. I didn't mean to babble. The wine. Still recovering...

Jim

"Jim Caputo" <caputoj@sbcglobal.net>
01/25/2002 09:37 PM

To: candreasson
Subject: Weekly Report 01/21/02- 01/25/02

---

o Met with EMS/Elements in San Jose
  o Elements has the capability to build the demo med cart. Have the tools and know how to make a tight tolerance unit
  o Will be made out of plywood with laminate finish with acrylic top.
  o EMS still has some development work to finish the drawer demo. Some "cross talk" issues and output requirements issues. Mubashir will address some of it with software.
  o Color scheme approve to Elements; Drawing not approved until I can talk to Brian about the overall height. Talked with Elements and they o agree the height should and could be reduced by 4" - 6". I will pursue this with Brian on Monday. I will approve stage 2 based upon the new quote when I talk with him.

o Met Mubashir. I am impressed with his knowledge. I think he will be a great asset to the project. We are in the next detail level in the development of the software specs and he has already identified a couple of good ideas on how to handle the interface with the cart. He views the database management as trivial and the real development in the interface and control of the antennas.
I generated a "use cases" list per Mubashir's request to make sure we cover all the elements. He will advise if the form is what he needs. Could you look at the copy sent to you for other additions you may think we need to have. Specifically the actions, reporting or error detection you think we need.

o Mubashar will have a time line and any changes in quote based upon our meetings this week.

o Finished preliminary cost estimate for the demo development and demo unit fabrication. (see attached) Need Mubashir's update to finalize. Added $20,000 for contingency.

Next week:

o Finalize schedule
o Introduce Mubashir to EMS and get the integration planning going
o Finalize Med Cart dimensions
o Get patient station on order
o Develop detailed specs for pharmacy reader
o Continue software details with Mubashir/Shariq

- Project Cost 011102.xls

Shariq Hussain
02/01/2002 06:32 PM

To: AMC-EMS Brian Monahan <bmonahan@ems-rfid.com>
cc: caputoj@sbcglobal.net
Subject: Re: Rockport Multiport Serial Card

Brian,
Microwarehouse rep has promised monday as delivery. Somehow he is claiming that they are back ordered. But i have called Elo direct and they seem to have a lot of them in stock. I will call him on Monday and ask for proof of shipping.
Thanks,
Shariq
AMC-EMS Brian Monahan <bmonahan@ems-rfid.com> on 02/01/2002 04:00:51 PM

AMC-EMS Brian Monahan <bmonahan@ems-rfid.com> on 02/01/2002 04:00:51 PM

To: Shariq Hussain/Howard Energy@Howard Energy
cc: "Jim Caputo (E-mail)" <caputoj@sbcglobal.net>
Subject: Rockport Multiport Serial Card

Shariq,

We received the serial port card today.
I fax'd you the paper work.

What is the status of the 15" LCD?

Brian

Brian Monahan
Applications Development Manager
bmonahan@ems-rfid.com <mailto:bmonahan@ems-rfid.com>

Escort Memory Systems
170 Technology Circle
Scotts Valley CA 95066
831 438 7000 ext. 214
831 438 5768 (fax)

"Jim Caputo" <caputoj@sbcglobal.net>
To: candreasson
Subject: Weekly Report 01/28 - 02/1
02/02/2002 08:56 AM

---

o Approved final drawing/dimensions and material specs to EMS. (you have the drawing).

o Elements has started on the first drawer unit for EMS test. Should be done within 1-2 weeks.

o EMS still working on "Cross Talk" issues They have solve two but when integrating the relay circuits that will communicate with the software we are using, a field was created and interfered with the antennas. According to Brian at EMS there is a fix for this. The cross talk between the compartments have been solved with metal shielding.

o Got the Nextwerk LOI signed. I am glad Mubashir's concerns were minor and we are able to move full ahead. He is very enthusiastic about the project and I think he is a great candidate for the long term software development at the hospital level. He brings a good problem solving mind to the table. Long term, he will have a positive impact on the unit cost of the MEPS Dispensing Station.

o Mubashir presented the schematic diagram for the controls circuit in our meeting yesterday. It looks good. We are coordinating with Brian at EMS for his review.

o Mubahsir had no changes to the latest time line. His only comment is that there is no contingency time for problems that may be encountered. (see attached time line)

o Mubashir has offered a 3D demo for the system. I told him to place that thought on hold. I am afraid it might slow us down. The real unit is what I am focusing on right now.

o We are meeting next week with Mubashir on a conference call with EMS to monitor progress to schedule. I will conduct this weekly or more often as necessary.

o I have updated the contents in the fire proof cabinet and included a table of contents for the folder residing there. All the agreements associated with the project and the CDA's are in one folder labeled EMS.

o Talked with Ray Vrabel regarding the Pyxis units. He was mildly cooperative with information but would not set up a meeting to view the systems.

o Talked with a Nurse at Little Company of Mary's hospital in Torrance. She was very helpful in answering questions regarding medication dispensing and delivery. Unfortunately they are a completely manual system. However, her feedback clearly indicates we are on the right path. Reduce labor and gain electronic reporting for inventory control, MAR's, Billing, etc.) If the costs go down on the tags, there will be no limit to the potential of this system.

Next week:

o Get patient station on order (did not complete last week)
o Develop detailed specs for pharmacy reader (did not complete last week)
o Continue software details with Mubashir/Shariq
o Schedule a meeting at EMS/Elements for progress review (within 2 weeks)
o Try to get an appointment with a Pyxis user to view screens and procedures.

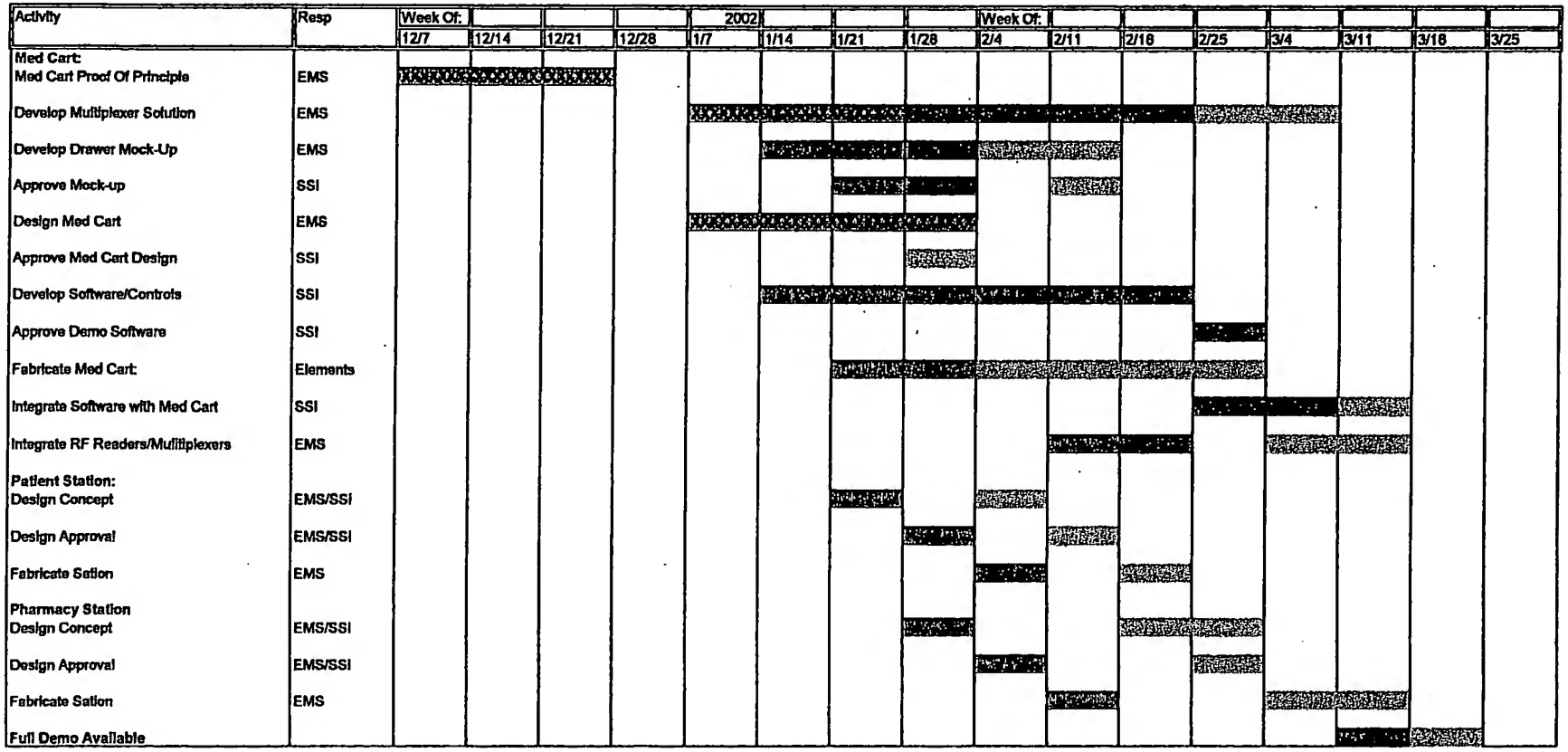
Christer, When do you want to go to Houston? I will make the arrangements.

Project Time Line
EMS/Safety Syringes, Inc.
Medication Error System
Page 1 of 1

Rev Date: 01/30/02

Rev Date: 01/30/02

Legend:
Schedule as of 01/09/02
Schedule as of 01/17/02
Schedule as of 01/30/02
XXXXXXX Percent Complete



CONFIDENTIAL

25-Jan-02

Safety Syringes, Inc.
Med Error System

Project Cost Projection

EMS/Oliver		1/23/2002
Phase I	$5,000	$5,000
Phase II	$25,000	
Phase III	$17,000	$47,000
Subtotal	$47,000	$52,000
Nextwerk (Software)	$16,000	$16,000
Hardware (SSI)		
Pharmacy Master		$2,500
Pharmacy Read		$1,710
Med Station		$3,325
Patient Station		$2,290
Subtotal		$9,825
Total:	**$63,000**	**$77,825**
EMS		
Patient Station	Not Quoted	$7,500
Pharmacy Station	Not Quoted	$5,000
Subtotal		$12,500
Contingency		$20,000
Grand total		**$110,325**

"Jim Caputo" <caputoj@sbcglobal.net> on 02/06/2002 11:23:25 AM

To: "AMC-EMS Brian Monahan" <bmonahan@ems-rfid.com>
cc: Shariq Hussain/Howard Energy@Howard Energy
Subject: RE: Corrected drawing

Brian,

Thanks for the update. Also for the interface memo. It will be very helpful.

Jim

-----Original Message-----
From: AMC-EMS Brian Monahan [mailto:bmonahan@ems-rfid.com]
Sent: Tuesday, February 05, 2002 4:19 PM
To: Jim Caputo (E-mail)
Subject: Corrected drawing

Jim

Attached is the revised drawing (rev 1.E).
I have included the ACAD solid model drawing that you can import into solid works.

Changes included:
1) Corrected geometry of drawer insert to match dimensions.
2) Incorporated 15" LCD display from manufacturer's datasheet.
3) Some changes to the display cabinet to provide for proper mating of plywood pieces.

I have given Alan the go to build one drawer for testing The balance of the drawers needs to wait until we have worked out the circuit board and other issues.
And to start the cabinet. The electric panel (inside wall for electronics to mount to) will probably change as to where cutouts are and where holes are drilled. For now he will just cut the perimeter and no cutouts. This should be made so we can pull it out completely and easily.
The metal shields for between the drawers are being ordered as well.

I am working on the spring design and latches and will send you drawings of what I propose.

<<Med Cart 1E.zip>> <<Med Cart 1E.pdf>>

Call if you have questions.

Brian

Brian Monahan
Applications Development Manager
bmonahan@ems-rfid.com <mailto:bmonahan@ems-rfid.com>

Escort Memory Systems
170 Technology Circle
Scotts Valley CA 95066
831 438 7000 ext. 214
831 438 5768 (fax)

PS: We have another project (much smaller) we need your help on to. This something Johan is working on. He is Roger's replacement.

	▫ The system asks him the target location (where and which Medcart is he taking it to? – this is for situations where there is more than one cart in the system.) ▫ The tech chooses the target Medcart ▫ The system goes in wait mode and waits for the tech to RF scan all drugs. ▫ When the user is done, he presses the confirm button on the window. ▫ The system confirms the names, quantity and target location of these drugs. At this time, the system has put these drugs in 'In transit for XXX' status where XXX is the target Medcart.
SCENARIOS	Handling of these situations: ▫ The drugs don't show up at the Medcart. ▫ The drugs show up at the wrong Medcart (should we even handle that, this means that the Medcart should know what's coming its way.) ▫ The quantity changes while in transit.
NOTE	

Use Case Number	UC-8
NAME	Run Inventory Checks
ACTORS	Any
GOAL IN CONTEXT	Inventory Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	The system will provide various reports (based on samples provided to us.) The user will go to the reporting section of the module and choose the required report. The system will display the desired reports.
SCENARIOS	
NOTE	The number, types and contents of these reports need to be provided to us.

Use Case Number	UC-9
NAME	Return Inventory from Dispenser
ACTORS	Tech
GOAL IN CONTEXT	Inventory Management
PRE-CONDITION	
POST-CONDITION	
UC DESCRIPTION	This happens when inventory is retrieved from the Medcart and brought back to the Pharmacy. ▫ The tech will bring up the 'Return Inventory' window. ▫ Now the tech will RF scan everything that he brought back.

Copyright © Safety Syringes, Inc.

Shariq Hussain
02/04/2002 09:10 AM

To: AMC-EMS Brian Monahan <bmonahan@ems-rfid.com>
cc:
Subject: RE: revised quote

Brian,
Here is an email that got from our vendor friday morning. He has promissed to get the touch screen to you by monday, today. Please let me know if it gets there or not. If not, i will order directly from the vendor.
Thanks,
Shariq

---------- Forwarded by Shariq Hussain/Howard Energy on 02/04/2002 09:09 AM ----------

Michael.Magnus@mwhse.com on 01/31/2002 02:18:29 PM

To: Shariq Hussain/Howard Energy@Howard Energy
cc:
Subject: RE: revised quote

Shariq,

I am working on getting the monitor there by Monday, it should get there in time. On the new order, the original CPU model is discontinued but the same exact model with only 128mb or ram is available so I am shipping that one with an additional 128mb chip. This turns out to be the same price as the original. The rocketport card is again backordered. The order is placed and I will follow up tomorrow.

Thanks,
Mike

-----Original Message-----
From: shussain@hpubs.com [mailto:shussain@hpubs.com]
Sent: Thursday, January 31, 2002 3:11 PM
To: Michael.Magnus@mwhse.com
Subject: RE: revised quote

Thanks Mike,

Here is the second order:

One Compaq EVO computer MWE Part # CP18209
One Rocket port serial MWE Part # DEB2070
One Elotouch 1545L touch screen

Please bill and ship to our Oceanside address in your records.
Thanks,
Shariq

PS: With this order, we are looking at 2 touch screens in total

"Jim Caputo" <caputoj@sbcglobal.net> on 02/04/2002 10:36:19 AM

To: Shariq Hussain/Howard Energy@Howard Energy
cc:
Subject: FW: Drawing rev 1D

Shariq,

Please have Mubashir refer to the products as listed below for all future correspondence, schematics and drawings.
Thanks
Jim

-----Original Message-----
From: Jim Caputo [mailto:caputoj@sbcglobal.net]
Sent: Monday, February 04, 2002 10:35 AM
To: Bmonahan@ems-rfid.com
Cc: Shariq Hussain; Christer Andreasson
Subject: Drawing rev 1D

Brian,

This is to confirm my phone message to you from Friday, on the approval to proceed with the fabrication of the Med Cart per your drawing revision 1D. The only change not reflected on this revision is the "read/write" station location move to approximately 3" from the front of the unit. Also, we are in the process of trade marking a name for the product family. From here forward, please refer the stations as follows on all correspondence and drawings:

Pharmacy Station: MEPS Pharmacy Station
Patient Station: MEPS Patient Station
Med Cart: MEPS Dispensing Station

MEPS is an acronym for "Medication Error Prevention System".

Jim Caputo

"Jim Caputo" <caputoj@sbcglobal.net> on 02/04/2002 10:35:04 AM

To: Bmonahan@ems-rfid.com
cc: Shariq Hussain/Howard Energy@Howard Energy, Christer Andreasson/Howard Energy@Howard Energy
Subject: Drawing rev 1D

Brian,

This is to confirm my phone message to you from Friday, on the approval to proceed with the fabrication of the Med Cart per your drawing revision 1D. The only change not reflected on this revision is the "read/write" station location move to approximately 3" from the front of the unit. Also, we are in the process of trade marking a name for the product family. From here forward, please refer the stations as follows on all correspondence and drawings:

Pharmacy Station: MEPS Pharmacy Station
Patient Station: MEPS Patient Station
Med Cart: MEPS Dispensing Station

MEPS is an acronym for "Medication Error Prevention System".

Jim Caputo

"Jim Caputo" <caputoj@sbcglobal.net>

To: candreasson
Subject: Weekly Report 02/4 - 02/08

02/09/2002 09:03 AM

---

o Received Rev1d on MEPS Dispensing Station. All changes have been incorporated into the drawing. (was approved last week on a mark up). I now have the ACAD file and would like to have Lorain turn it into a 3D drawing. This will be helpful in the future for production builds, regulatory etc. I will ask Bill for some of Lorain's time. I estimate about 4 hours max.

o Booked meeting with Roger Anderson at MD Anderson on the 21st of Feb. I will get with you on a preparation packet for presentation to Roger.

o Met with Mubashir and Shariq on the details of the screens and use cases. We spent about 3 hours going over the system screens and individual modules for the software. We should have some preliminary screens for review next week.

o Received the EMS agreement from Sanjeev on Friday. I will set up a conference call per our discussion of a couple of weeks ago with Christer, Jim, Mark and Cathy of EMS to discuss the changes they requested. We need to clear up the intellectual property ownership issue.

o Completed a preliminary budget for the fiscal year 02/03. (See attached) We need to discuss the assumptions.

Next

o Meet with Mubashir on progress with software development

o Conf call with Brian on progress with cart.

o Work on Rev B with Christer of budget

o Schedule off-sit on demo unit marketing strategy

o Conf call with Mark and Cathy of EMS on definitive agreement

- 02.03 Budget.xls

"Jim Caputo" <caputoj@sbcglobal.net>

02/09/2002 09:13 AM

To: candreasson
Subject: FW: Corrected drawing

Christer,
FYI. I did not want to send this while you were in EU just in case to took too long to download.
Jim

-----Original Message-----
From: AMC-EMS Brian Monahan [mailto:bmonahan@ems-rfid.com]
Sent: Tuesday, February 05, 2002 4:19 PM
To: Jim Caputo (E-mail)
Subject: Corrected drawing

Jim

Attached is the revised drawing (rev 1.E).
I have included the ACAD solid model drawing that you can import into solid works.

Changes included:
1) Corrected geometry of drawer insert to match dimensions.
2) Incorporated 15" LCD display from manufacturer's datasheet.
3) Some changes to the display cabinet to provide for proper mating of plywood pieces.

I have given Alan the go to build one drawer for testing The balance of the drawers needs to wait until we have worked out the circuit board and other issues.
And to start the cabinet. The electric panel (inside wall for electronics to mount to) will probably change as to where cutouts are and where holes are drilled. For now he will just cut the perimeter and no cutouts. This should be made so we can pull it out completely and easily.
The metal shields for between the drawers are being ordered as well.

I am working on the spring design and latches and will send you drawings of what I propose.

<<Med Cart 1E.zip>> <<Med Cart 1E.pdf>>

Call if you have questions.

Brian

Brian Monahan
Applications Development Manager
bmonahan@ems-rfid.com <mailto:bmonahan@ems-rfid.com>

Escort Memory Systems
170 Technology Circle
Scotts Valley CA 95066
831 438 7000 ext. 214
831 438 5768 (fax)

PS: We have another project (much smaller) we need your help on to. This something Johan is working on. He is Roger's replacement.

"Jim Caputo" <caputoj@sbcglobal.net>
02/16/2002 02:43 PM

To: candreasson
Subject: Weekly Report 02/11 - 02/15 & Board Presentation draft

---

o Approved drawer spring load mechanism from EMS (see attached drawing)

o Review command outputs with Shariq and Mubashir (see attached word document)

o Reviewed definitive agreement changes with EMS (conf call with Christer, Jim, Mark and Cathy) EMS agreed to all items but section 7 "exclusivity" They will draft changes within 2 weeks for our review.

o Had Shariq order patient station to be delivered to EMS for reader integration. This station will house a computer,EMS reader/writer and touch screen.

Shariq met with Mubashir at his facility to review development progress. We will continue this at lease once per week and perhaps twice per week. I will attend the next meeting. We need to keep to the schedule and apply some pressure to all the suppliers. I am doing this with EMS/Brian. His indication is that we are on the overall schedule. The drawer sample was two days late to him but should not impact the overall schedule.

o Prepared for SSI Board Meeting. (See attached draft)

Next Week
o SSI Board Meeting
o Meet with Shariq on patient station status
o Prepare for and meet with Roger Anderson in Houston
First pass 02/03 budget review with Christer
o Follow up with EMS on Drawer sample results. (get digital photo if possible)
o Discuss marketing strategy with Christer at off-site in Houston
o Review draft "use cases" from Mubashir (has turne my two page document into a 26 page detailed use case list for all action and curser movements)

- spring_assy-1C.pdf
- Med Cart Software Interface Overview_.doc
- SSI Board Meeting Presentation021902.ppt

"Jim Caputo" <caputoj@sbcglobal.net> on 02/22/2002 10:32:39 AM

To: Shariq Hussain/Howard Energy@Howard Energy
cc:
Subject: RE: MEPS Software Dev Status 022202

Shariq,
The trip was good and the indications are that we are right on with our thinking. There are no surprises as of yet in the market need for our product. As far as a drawer, I thought Mubashir was going to use what he had at his point. Let's talk today either by phone or at SSI. I will be in a meeting until about 2PM and then can meet via phone or at SSI.

Jim

-----Original Message-----
From: shussain@hpubs.com [mailto:shussain@hpubs.com]
Sent: Friday, February 22, 2002 10:02 AM
To: caputoj@sbcglobal.net
Subject: MEPS Software Dev Status 022202

Jim,

I hope you had a good trip to Houston. Despite the last week hickups, Mubashir is still on schedule. He is flying in a programmer from Munster, IN to work on this project. We are aiming to have every thing ready in a simulation mode by March 11. Hopefully we will have MEPS cart available to us by then for integration. Once the cart is delivered, we will post this programmer at SSI. By being on site, he will be able to test and correct immediately any issues that come up.

Did you get a chance to talk to Brian about delivering a drawer to us? We will try to send a software diagnostic kit for Opto equipment operation to him next week. We tried yesterday with their built-in controls but didn't have much luck. Mubashir thinks that we have to tweak the controls a bit and should be ready by Wednesday of next week.

I am taking a day off today (Religious Holiday). But if you need to get a hold of me, please feel free to call me on my mobile.
Thanks,
Shariq

"Jim Caputo" <caputoj@sbcglobal.net>

02/23/2002 05:12 PM

To: candreasson
Subject: weekly report 02/18 - 02/22

---

o Conference call with Brian Monahan EMS -
-About a 3 days behind on the pc board assembly for the drawer
-Received a drawer from Elements for antenna integration and test
-Elements suggests making a mock-up of the entire cabinet prior to making the laminate (Will not be an up charge; due Wednesday next week)

o Nexterwerk is behind one week but according to Shariq will not be late on the schedule. (I think the Howard sale put him in some trouble. He has layed off about 35 people.
-Mubashir has finished use case list. I will be meeting with them on Monday afternoon at 2PM to discuss (see attached) It looks very comprehensive and inclusive of the specs we have provided Mubashir.

o Met with Dr. Roger Anderson. We are on track with our thinking for the value of this system.

o Reviewed preliminary budget. Will make the changes discussed in the meeting in Houston Marriott.

Next Week

o Meet with Nexterwerk and Shariq on software design progress
o Confirm schedule for a visit to EMS. May be next week. For sure 3/11
o Conference call with Brian on Tuesday for status of drawer test results
o Summarize marketing strategy as discuss in Houston

Christer,

Have a safe trip to England. It was a good trip to Houston. We are dead nuts on target with this technology and its benefits.

Jim

- SSI-MEPS Functional Specs022202.doc

"Jim Caputo" <caputoj@sbcglobal.net>

02/28/2002 10:39 AM

To: "Shariq Hussain" <shariq@hpubs.com>, candreasson

Subject: FW: Photos of cabinet mock-up

Chirster/Shariq,
This is a mock-up in plywood of the MEPS Dispensing Station. Now is the time to question anything as they will make the final next week. The drawer unit will have an insert and the a rounded front panel flush with the side panels of the cart.
Shariq, does Mubashir need to see this?

Jim

-----Original Message-----
From: AMC-EMS Brian Monahan [mailto:bmonahan@ems-rfid.com]
Sent: Thursday, February 28, 2002 10:08 AM
To: Jim Caputo (E-mail)
Subject: Photos of cabinet mock-up

Jim,

Here are photos of the cabinet mock-up.
The finished product will have a single side extending from the ground up to the top of the monitor enclosure.
Currently this is in sections in case changes were needed.
Also a 1" skirt will be around the base to hide the casters.
On the module the counter top is just plywood, it will be acrylic with a recessed area as shown in the drawing.
The drawer does not have the insert yet.
He is just waiting for me to give him changes or approval before he starts cutting the final enclosure.

I planned to do so by tomorrow.

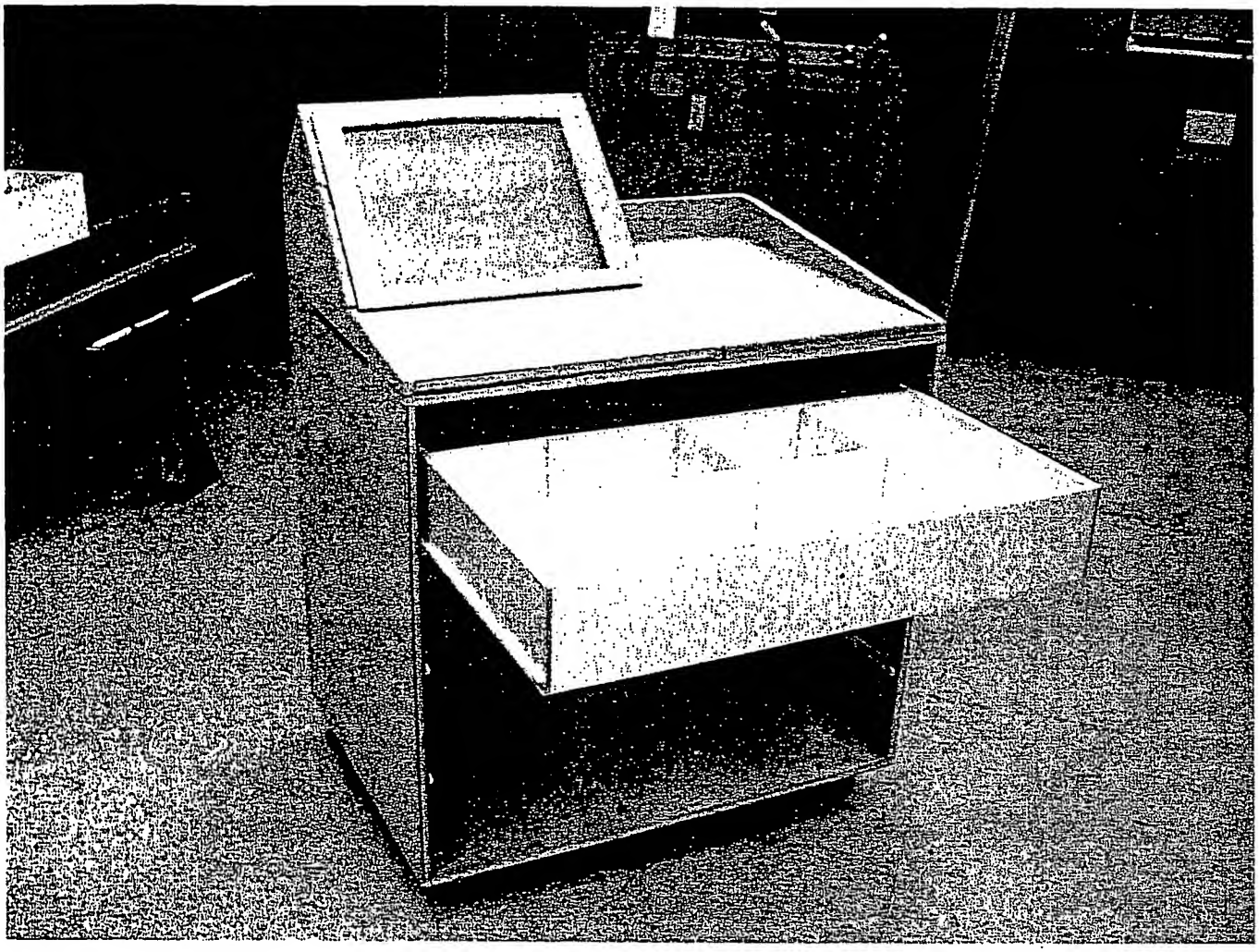
Brian

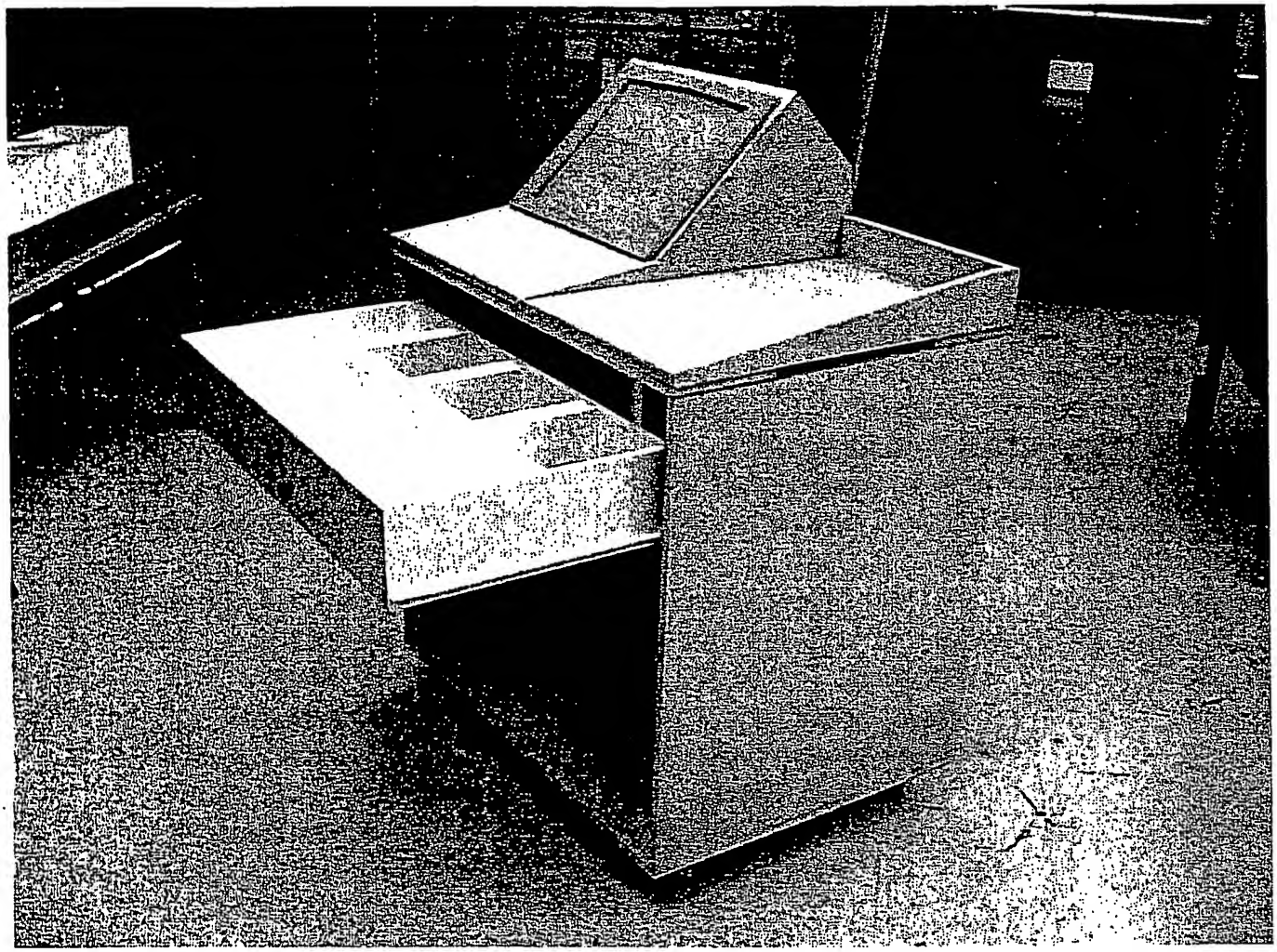
<<MVC-001F.JPG>> <<MVC-002F.JPG>> <<MVC-003F.JPG>>

- MVC-001F.JPG

- MVC-002F.JPG

- MVC-003F.JPG





IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	:	10/086,183	Confirmation No.: 8214
Applicant	:	Christer O. Andreasson	
Filing Date	:	02/26/2002	
Title	:	SYSTEMS AND METHODS FOR TRACKING PHARMACEUTICALS WITHIN A FACILITY	
Group Art Unit	:	2636	
Examiner	:	Julie Bichngoc Lieu	
Docket No.	:	706737.38	
Customer No.	:	34313	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL DECLARATION OF CHRISTER O. ANDREASSON AND JIMMY C. CAPUTO UNDER 37 C.F.R. §1.131

Sir:

The undersigned inventors, Christer O. Andreasson and Jimmy C. Caputo make this declaration attesting to the conception of the present invention prior to the effective filing date of Chung Provisional Application 60/232,514 filed on September 19, 2001.

The previous Declaration filed June 29, 2005, included twenty-four (24) Exhibits tracing the development of the inventions claimed in the present application. Exhibits 1 through 6 and 10a and the corresponding paragraphs in that prior Declaration are documents all dated prior to the filing date of

September 19, 2001, of Chung 60/323,514 and attest to and exhibit conception as well as diligence toward actual reduction to practice.

We further declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Title 18, United States Code, Section 1001, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: AUGUST 10, 2006 By: _____
Christer O. Andreasson

Dated: 08/10/06 By: _____
Jimmy C. Caputo

X. RELATED PROCEEDINGS APPENDIX

None.